Special Annual Truck Issue

MOTOR AGE

Vol. XXXII
No. 18

CHICAGO, NOVEMBER 1, 1917

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Editorial Contents—Page 3

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MOTOR AGE

Published Every Thursday by the
CLASS JOURNAL COMPANY
Mallers Building
CHICAGO ILLINOIS

Entered as Second-Class Matter September 19, 1899, at the Postoffice at Chicago, Illinois, Under Act of March 3, 1879—Member of the Audit Bureau of Circulations—Copyright, 1917, by the Class Journal Co.

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Vol. XXXII Chicago, November 1, 1917 No. 18

Contents

AMERICA'S ACHIEVEMENT IN TRUCKDOM.... 5
EXPECT AIR BOARD CHANGE..... 13
EDITORIAL—WAR AND THE TRUCK—WAR TRUCK INFLUENCE—MOTOR TRUCK TIRES—TRUCK ENGINEERING—TRUCK STARTERS AND CRANKCASE LUBRICATION..... 14
YEAR NOT PROLIFIC IN TRUCK DESIGN..... 16
A PROPHECY HEEDED..... 22
HOW MUCH GASOLINE DO YOU WASTE?..... 26
DIRECTORY OF MOTOR TRUCK MAKERS..... 27
BUYERS' GUIDE TO 1918 GASOLINE TRUCKS.... 30
1918 GASOLINE TRUCK SPECIFICATIONS..... 34
1918 ELECTRIC TRUCK SPECIFICATIONS..... 48
MODERN PYRAMID BUILDERS..... 51
THE TRUCK—SYMBOL OF MODERN WARFARE 58
TRUCK—FORMER BUSINESS SLACKENS..... 62
SERVICE AND EFFICIENCY SELL TRAILERS FOR INDUSTRY 64
ELECTRICAL EQUIPMENT OF THE MOTOR CAR 70

DEPARTMENTS

READERS' CLEARING HOUSE..... 72
MOTOR CAR REPAIR SHOP..... 74
AMONG THE MAKERS AND DEALERS..... 75
FROM THE FOUR WINDS..... 76

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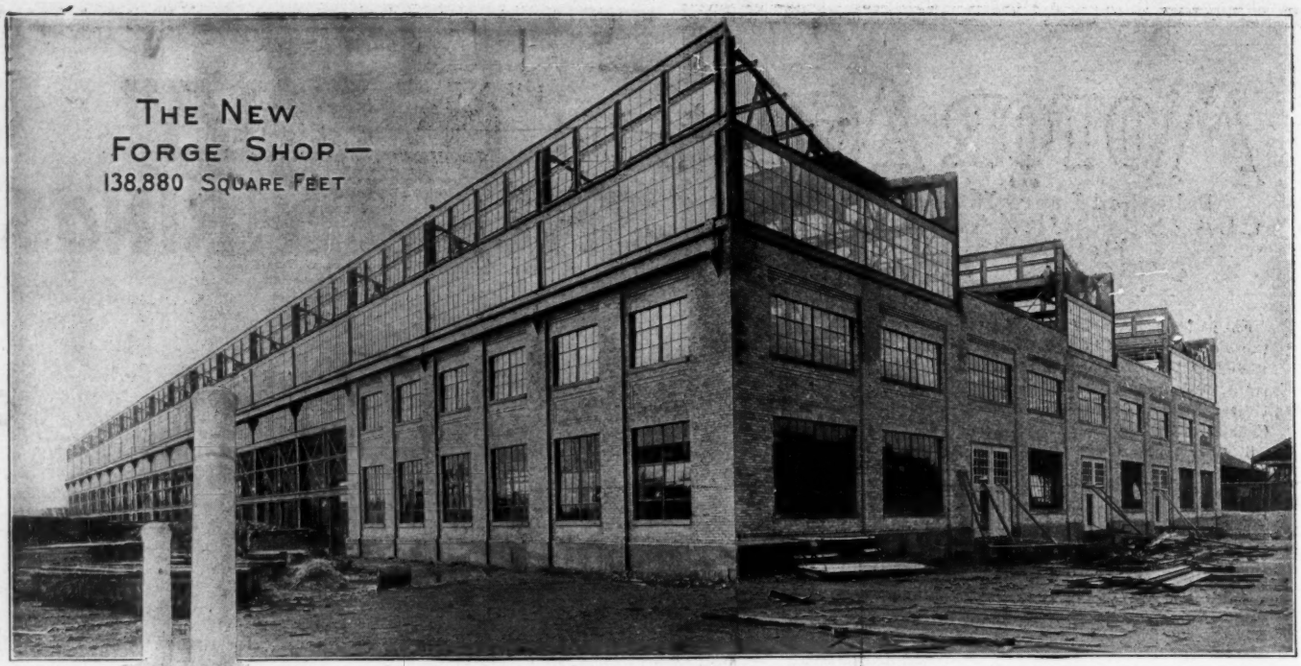

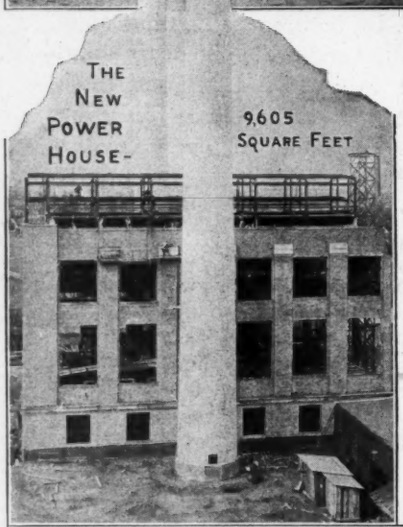

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These photographs of new buildings rapidly approaching completion at the Studebaker plant in South Bend tell a story of complete confidence.

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MOTOR AGE

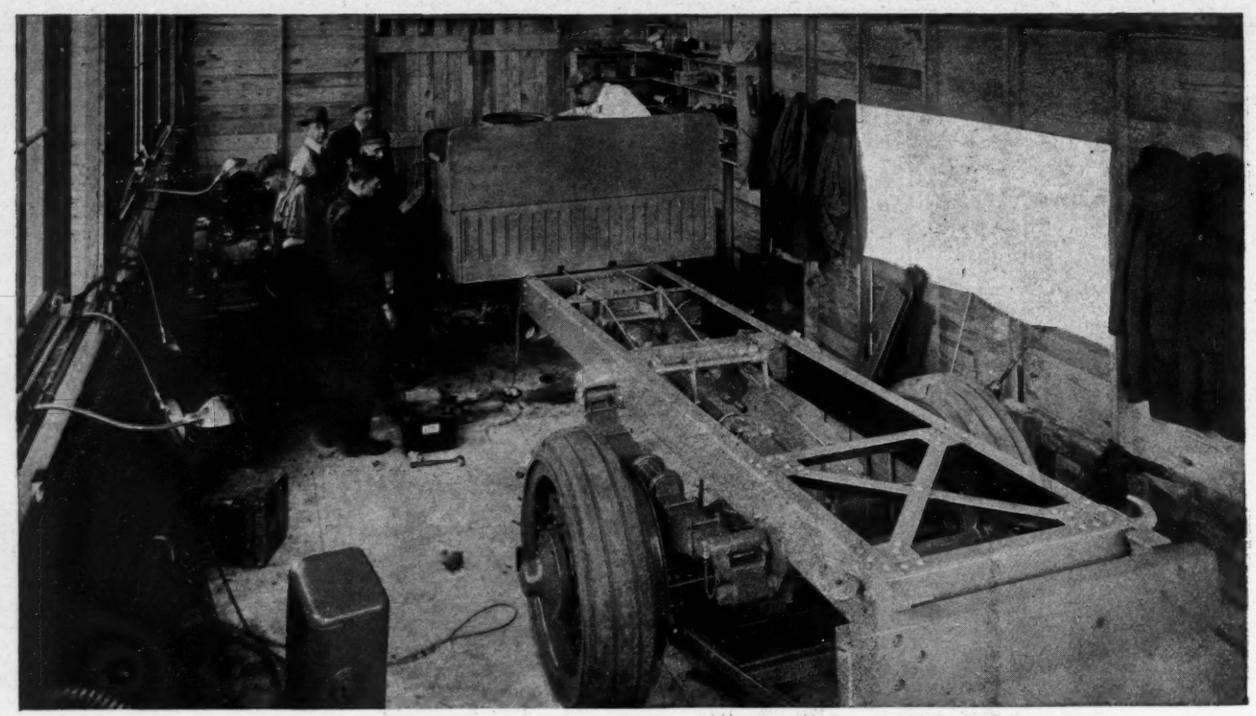
America's Achievement *in* Truckdom

Details of Construction of U.S.A. type B War Chassis

The U. S. A. war truck from Rochester making its first appearance on the road. Note how flat the front and rear springs are even without load. The curious front splash guards proved very effective. The radiator guard of heavy steel and the massive wooden bumper give complete protection to the front of the vehicle. From left to right on the seat are W. E. Dugan, factory superintendent; W. T. Norton, Jr., chief engineer; McIntyre, foreman experimental department of Selden, and A. Ludlow Clayden, of Class Journal Co. staff, who was one of the engineering committee which designed the new war truck

By A. Ludlow Clayden

EDITOR'S NOTE—Now that the type B, U. S. A. war truck has been accepted formally by the Government at Washington as represented by the President and the Secretary of War, it is permitted MOTOR AGE to tell its readers in type and photographs the features of its design and construction. A. Ludlow Clayden, who describes the truck on the following pages, was one of the engineering committee responsible for its design. As told in the preceding issue, each of the two trucks officially accepted last week are the first of thousands which are being turned out. They were assembled in factories hundreds of miles apart, each more than 450 miles from Washington, and in each case the truck was driven over the road in good time and without trouble, notwithstanding wet mountain roads. This in the face of the fact that twenty days before the trucks took the road the plans and specifications had not left Washington. Patterns were made, parts cast, machined and assembled in less than three weeks. The assembly was in record time.



The box in which Selden assembled the war chassis. Work continued night and day from Thursday to Monday with parts arriving all the time

This set a world record in production of this sort, but it is not the speed of production, nor of itself is it the excellence in design or construction that are the real achievements connected with the new army truck that is to help win the war. It is assured that the truck is one of the biggest engineering successes of the war, will revolutionize army truck work and may possibly play a big part in changing commercial truck design. But—

The real achievement of the truck is that it evidences a new thought in national efficiency and becomes a new connecting link between commerce and war. It is the composite of the best of American engineering and is the product of fifty or more truck engineers. It is the practical development of the ideal of Brigadier-General Chauncy B. Baker of the Quartermaster's Department, who is in charge of the whole transportation back of the United States army. In France General Baker saw the thousands of parts, the army of noncombatants and the endless confusion occasioned by the many different models in service. His ideal was to overcome these evils of standardization by a standard design of truck, all of whose parts would be interchangeable with all others of that class. American engineers have made that ideal a reality. The finished product of their co-operation is manifested in the assembled heavy-duty war trucks.

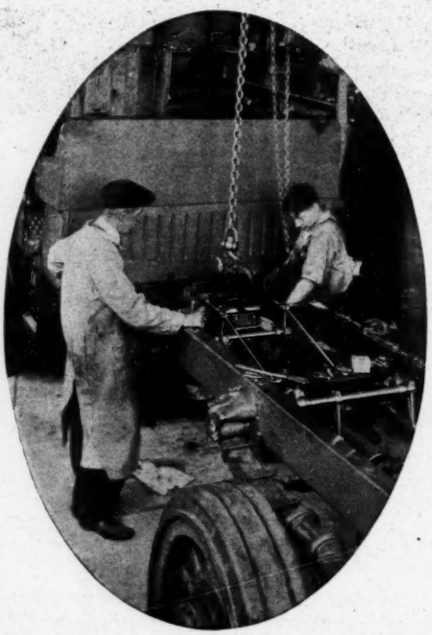
DESIGNED, built and accepted by the War Department in less than three months the standard class B military truck has received universal commendation. Many of those who in July were convinced the impossible was being attempted acknowledge the experimental chassis is more than sufficient evidence that they were wrong, and the orders now accepted by the parts makers assure the delivery of the 10,000 machines called for between Jan. 1 and June 30 of 1918.

The class B is the largest truck the Quartermaster's Corps will use for transport and is supposed to carry 3 tons but it is strong enough and powerful enough for 5 tons. Of course, the military vehicle will be sprung for 3 tons only, and to convert the military design to a commercial 5-tonner a change of springs would be necessary.

Design Is Clear

It is an exceptionally clean design and entirely up to date without being experimental in any feature. That is to say, while every part is a new design no experiments are being made with new principles. It is just conservative but up-to-the-minute engineering.

The wheelbase is 160 in., the engine 4¾ by 6 in., 424 cu. in., the transmission a four-speed, admidships, the clutch a dry disk inclosed in the bell housing, and the rear axle a worm-drive, full floating type. Steering is by worm and worm wheel. Fuel feed is by gravity from a 15-gal. tank on the dashboard, there being a 16-gal. reserve tank under the seat, and ignition is double, with battery and magneto systems entirely separate. The frame is pressed steel, of channel section, and quite straight; the springs are almost perfectly flat, and Hotchkiss drive is used. Both brakes are internal and on the rear axle.



The transmission going in after the seat was in place. The ease of assembling or taking out the gearset is one of the features of the design

Taken as a whole, there is nothing peculiar in the design except its unusual strength for the load capacity. It is really a 5-ton truck, and weighs 8600 lb. for the chassis with wheels and tires, dashboard and seat.

Never a Better Engine

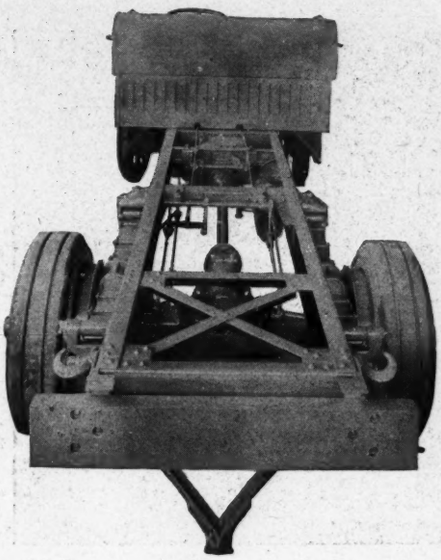
Probably there has never been a better designed engine. Seeing the collaboration upon it, the design ought to be quite above the normal, and the careful detail is not done justice in mere word description. Three particular points have been kept in mind throughout—first, the best possible lubrication; second, the provision of a water jacket reaching every smallest point likely to become hot; and third, rigidity without excessive weight.

Additional points of note are a conspicuous cleanliness of exterior and an entirely inclosed governor mechanism of great simplicity which positively cannot be tampered with when once set. The cylinders are cast in pairs, with detachable heads, each head being secured by thirteen studs. The two spark plugs are located side by side, with a water space between their bosses, right in the center of each cylinder, and as an example of careful detail the water outlet pipe, which is a brass built-up proposition, is offset enough to allow easy access to both plugs with a socket wrench.

Tungsten Steel Valves

All the combustion space is in the head castings, the tops of the blocks being faced flat, the valve heads standing up a little from this surface. All valves have ports 2⅛ in the clear, and are tungsten steel head and stem, with 60-lb. springs. The diameter of 2⅛ is maintained on the exhaust ports right out to the manifold flange, but the intake is restricted to 1 11/16 in. at the flanges, the desire being to maintain a fairly high velocity right up to the moment of entering the cylinder. The cylinder walls are 5/16 in. thick. Water completely surrounds each cylinder and each valve seat.

Following up the security assured the heads by thirteen studs ½ in. in diameter, each block is attached to the crankcase with seven ¾-in. studs, the base flange being ½ in. thick at the thinnest points and 1 in. thick at each holding-down stud boss. The water inlet flanges, which are on the sides of the blocks remote from the manifolds, are 1 3/16 in. in diameter, and the outlets on the head castings are the same size. The crankcase is all aluminum, including the bell housing and the oil pan. The bearings are very rigidly webbed, and the whole case is as stiff as could well be imagined.



Nothing gives a better idea of the sturdiness of the war truck than this rear view. Note the powerful springs and huge brake drums, also the clean, straight layout of the brake rods. The rear bumper is temporary, as a type with a central towing hook is to be used in France

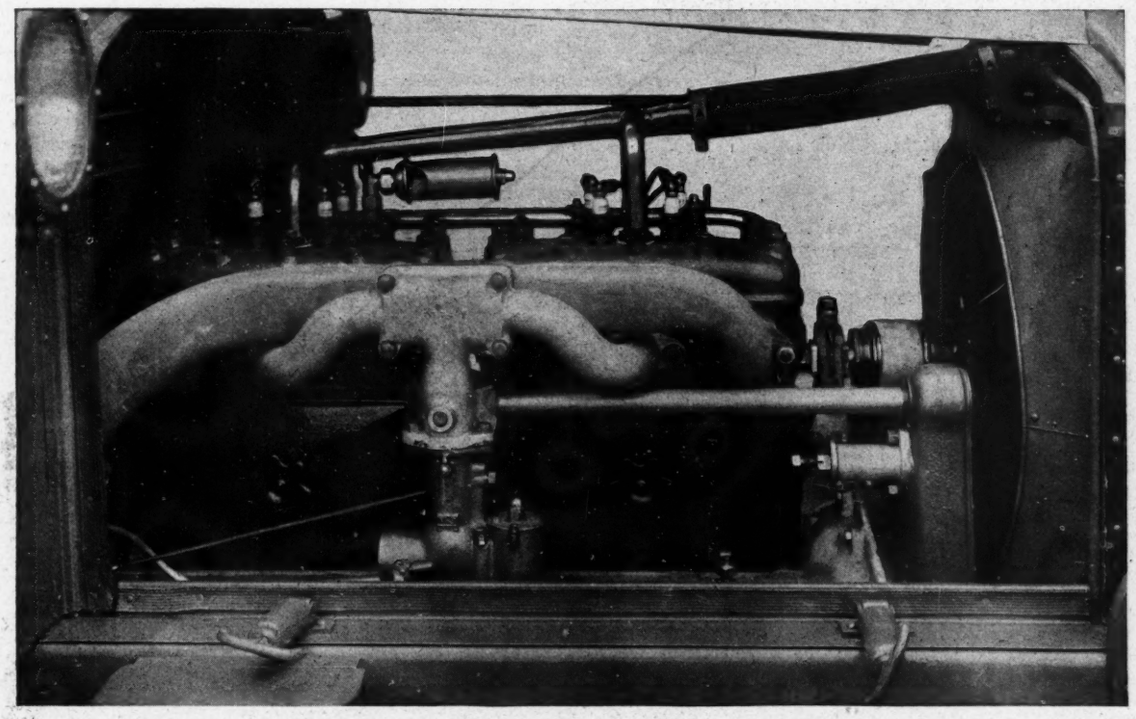
At the rear end there are two deep arms which act as the rear supports. Here the diameter of the case and of the flywheel housing is such that the arms are extremely short, and they are formed in such a way that the top of the bell makes a complete arch construction from tip to tip of the arms, so adding considerably to their natural strength. The front support is a spigot on the front-end cover, turned and held in a swivel collar on a dropped cross member of the frame, so giving a three-point support with sufficient flexibility to counteract all stresses in the main frame.

Complete Pressure Lubrication

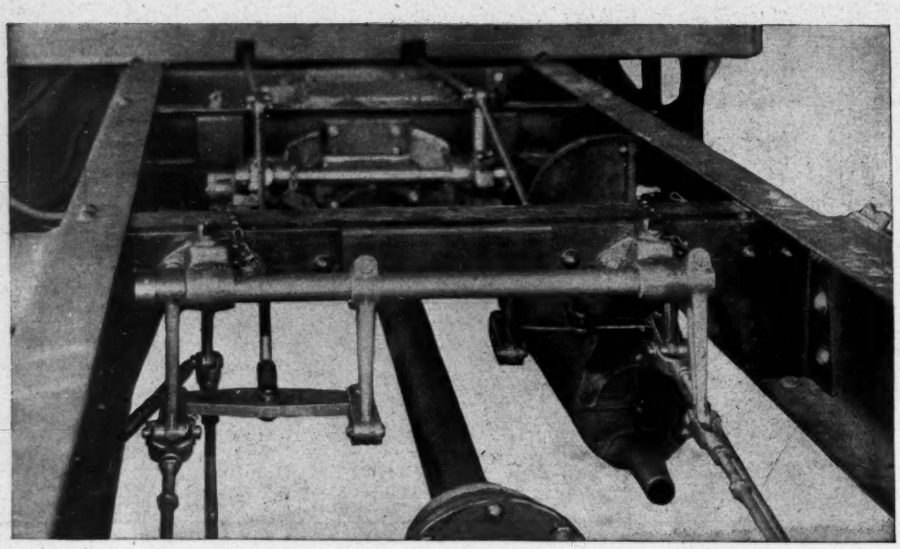
Complete pressure lubrication is used, even to the extent of feeding the wrist pins by means of tubes secured to the connecting-rods. Oil is fed to the three main bearings, thence by straight holes diagonally to the crankpins, and thence to the wrist pins. The pump is in a well at the extreme rear right end of the crankcase oil pan, where it is separated from the rest of the system by a wall that prevents oil falling from the bearings from entering without first passing through the screening system, which is very elaborate.

The forward portion of the pan is very shallow, so as to give great clearance over the front axle, and sloped toward the deep rear end, which contains all the oil. The top of this sump is closed by a sheet of thin steel having in the center a funnel reaching nearly to the bottom of the sump.

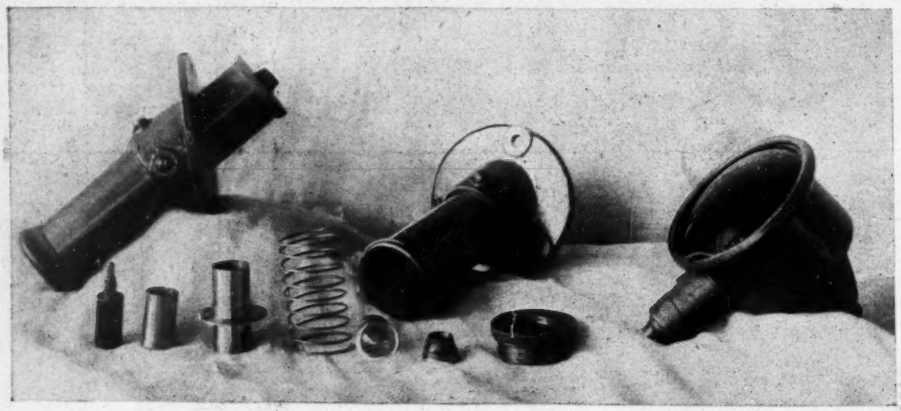
The funnel is surrounded by a wall reaching nearly up to the sheet steel just mentioned, so that oil has to pass down the funnel and then up again over the wall, the chamber into which the funnel discharges being thus always full. This is the settling chamber, designed to catch all particles of carbon and impurities and



The main interest on this side of the engine is the twinning of the exhaust and intake manifold above the carbureter. Exhaust gas lies all around the part of the intake where the vertical member from the carbureter joins the branches. The heat thus applied boils off all condensed fuel and dries the gas. The engine will idle and accelerate almost as well when dead cold as when hot. No hot air is used. The upstanding part on the front end is the governor case, the cap screw and nut being the adjustment which is locked and sealed. Note nothing in front of the valve covers hinders tappet accessibility and there is a minimum of exposed spark plug wiring



A close-up of the brake equalizer layout. The caps with chains seen on the bearings cover oil chambers which feed the shaft through wicks and hold enough lubricant for months of hard service without replenishment



This is the dark lamp for use in the danger zone. It sets in the dashboard at a 30-deg. angle and throws a tiny spot of light on the front wheel and road. It was designed from data supplied by W. F. Bradley in a Motor Age article on makeshift truck lights which are used by the Italian army

prevent them from passing on into the main oil reservoir. However, after passing over the wall beyond the funnel there is still a large screen of wire mesh to be passed, and another screen is used on the actual pump intake.

This makes the oil circuit from pump to bearings, to settling chamber, to first screen, to second screen, and then round again. The settling chamber can be drained by a plug in the bottom, and draining it does not affect the main body of the oil, so very little need be wasted.

The tappets are housed individually in the crankcase, each being a complete assembly of roller, hollow adjustable plunger and guide. They are held in pairs by dog clamps and studs. Timing is as follows:

	Opens	Closes
Exhaust	45 deg. early	5 deg. late
Intake	12 deg. late	35 deg. late

Three Diameters

There are three diameters for the camshaft bearings, 2¼, 2⅛ and 2 in., their lengths being 2¼, 1¾ and 1⅜ respectively. On the rear end of the shaft there is a skew gear driving the oil-pump shaft, this being the extreme end, beyond the rear bearing. Thrust from the gears is carried to the front end of the shaft, and resisted by a spring-backed hard-steel plunger which sets in a socket in the front-end cover. The pump shaft is, of course, vertical, and the coupling to the pump itself consists of a short coil spring with the ends bent across the coil diametrically. Both the drive shaft and the pump shaft are slotted and the ends of the two nearly meet, the bent-over extremities of the springs setting in the slots. This allows the oil pan and the pump with it to be removed and replaced with a minimum of trouble.

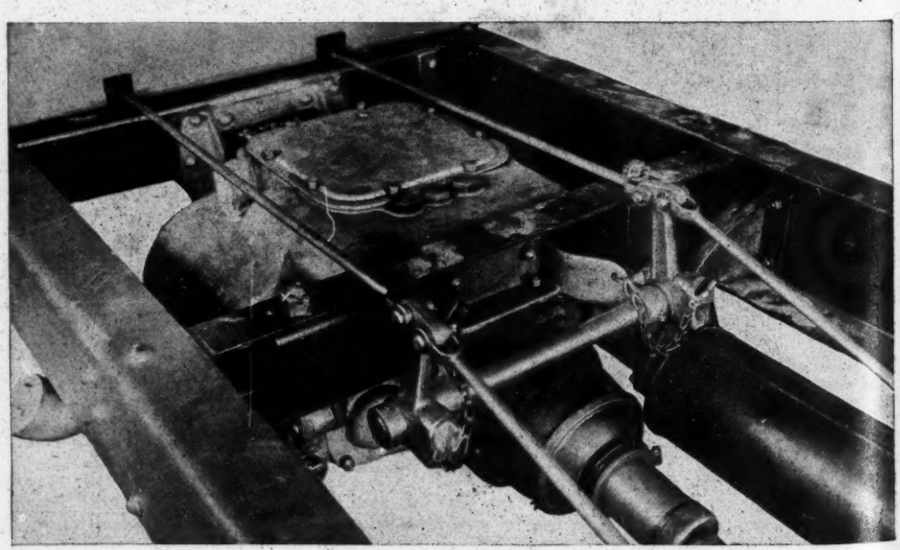
In the front end there are four gears; the crankshaft pinion, pressed on the end of the shaft; the camshaft wheel, driving the generator gear; and, on the other side, the gear for water pump and magneto. The governor motion attaches directly to the front end of the camshaft.

Thus, on the right side of the engine are the generator, the carbureter, and both manifolds, while on the left are the water pump, magneto and battery ignition distributor, the latter being set on top of the front-end case, where it can be driven by skew gear off the water pump drive shaft. This makes for ease in linking together the magneto and the timer advance controls, and keeps all wiring on the one side of the engine.

Construction of Governor

The governor consists of steel balls held between a disk that can slide forward against a spring, and a female cone fixed to the camshaft front end. In moving forward, the disk bears upon the short end of a vertical lever, the upper end of which is linked to a throttle in the intake manifold just above the carbureter attachment flange. This lever is fully inclosed, and the spring which pushes against the centrifugal action of the balls is set in the case halfway up the lever.

Here there is a threaded plunger with a lock nut, by which the pressure on the spring is set, and both pin and lock nut are secured when set by a sealed wire that entirely prevents unauthorized adjustment. The throttle, operated by the governor, is the usual butterfly sort, but the spindle is set a little off center, so that the suction of the engine tends to open it, this making for a quick reopening and preventing sluggish action.



The transmission has three-point suspension. At the rear are the two hangers, and the front bracket encircles the nose of the transmission case. Undoing two nuts and knocking out two pins releases the whole gearset

The water pump is a separate assembly, and its shaft is coupled to the drive shaft, which is set in the crankcase and carries the gear. This makes the pump detachable without disturbing the front end. The magneto is set well back on the left side, and is coupled to the rear end of the pump shaft. Clearances are large, and no accessory is placed awkwardly.

A conventional design is found. The diameter is 2½ in. on the three main bearings and 2⅜ on the pins. The bearing lengths are 4 in. for the rear and middle bearings and 3 1/16 in. for the front, the pins being 3 in. long. The webs are very stiff, the long ones having a section 3¾ in. wide by 1¾ in. thick at the thickest point. The proportions allow perfectly straight holes to be drilled for the oil direct from each main bearing center to the pin center. For the flywheel attachment there is a flange.

The flywheel itself is exceptionally large, being 20 in. diameter and 4 in. wide on the rim, the weight being 130 lb.

The cast-iron pistons are fairly heavy, 6⅛ in. long and with three rings and a 1⅜ hollow wrist pin locked in the piston. The pin center is 2⅝ in. from the bottom of the piston. Ten-thousandths clearance at the top and over the upper ring is called for, and four-thousandths on the lower ring and the rest of the skirt.

For Heavy Fuel

The manifolding system is designed to take care of heavy gasoline, and is regarded as the most experimental thing about the engine. The exhaust manifold is conventional except that at the center it has a rectangular opening. The intake ports are below the level of the exhaust ports, so that the intake manifold flanges can be attached, and the intake manifold branches come out and up in an easy sweep.

Where they join there is a rectangular face matching the one on the exhaust manifold, and a sort of box like a muff on the intake. These two faces bolt together, with a gasket, thus allowing the exhaust to play upon the point where the two branches of the intake connect with the short vertical part containing the governor throttle and ending in the carbureter flange. The carbureter is set quite high and will, of course, be a vertical model, though the make is entirely undecided and will in fact be settled by trial only.

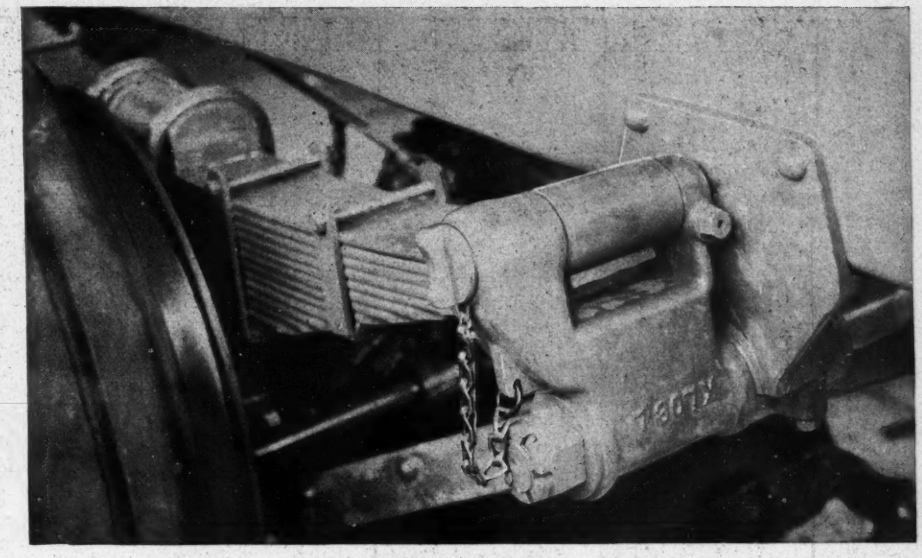
Concerning the multiple dry-disk clutch there is little to be said, except that the throwout bearing is much above the average size. The gearset with its four speeds and the two shafts in the same horizontal plane is much as it was first sketched out. It is an excellent manufacturing proposition and will weigh about 300 lb.

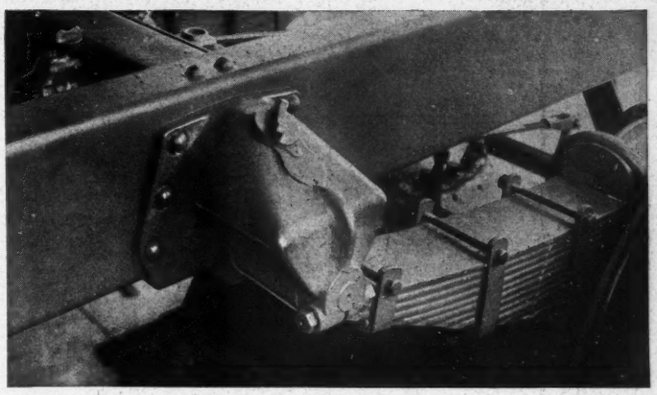
The transmission is rather ingeniously hung. At the rear are two lugs drilled to receive pins on a transverse axis, and these pins also pass through the ends of a pair of brackets hanging from a plain pressed steel cross member. The front end of the case has a "nose" surrounding the bearings of the main shaft, and this nose is held up to a bracket hung from another cross member by a cap like a bearing cup. The cap does not grip the case tightly so as to allow a certain amount of floating fore and aft movement.

Easy to Remove Case

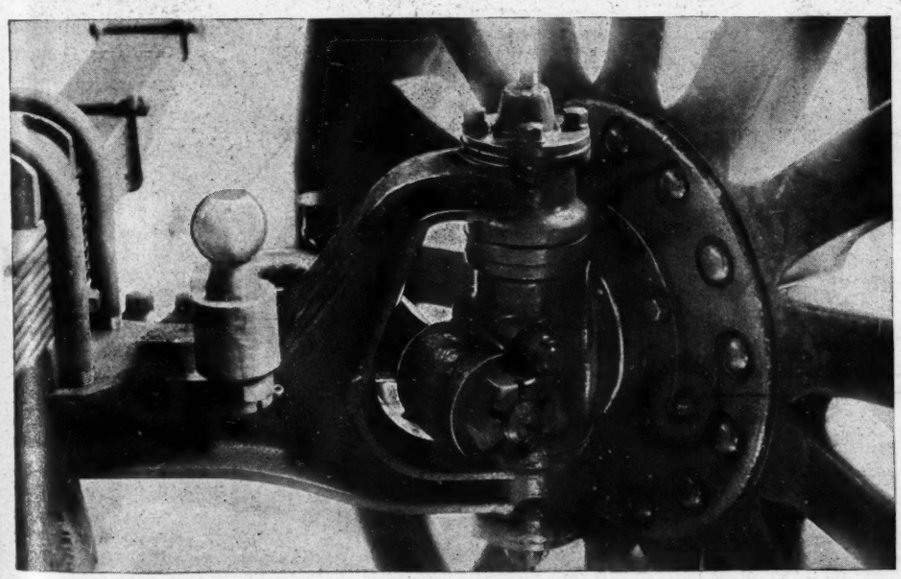
This suspension makes it very easy to remove the case, since it is only necessary to remove the cap and knock out the two pins at the rear after disconnecting the pins in the three gear striker rods and disconnecting a universal joint in front, the slip joint takes care of the universal on the propeller shaft. The last mentioned is normally almost horizontal, in a practically perfect position for the Hotchkiss drive.

The axle, though it contains much that is new, is mainly Timken in exterior. It is a full floating pattern with a pressed steel case and has taper roller bearings all through, even on the worm shaft. As stated before, both sets of brakes are expanding, side by side in the same drums. These brakes are of the band type and are provided with adjustment for setting the concentricity of the bands.





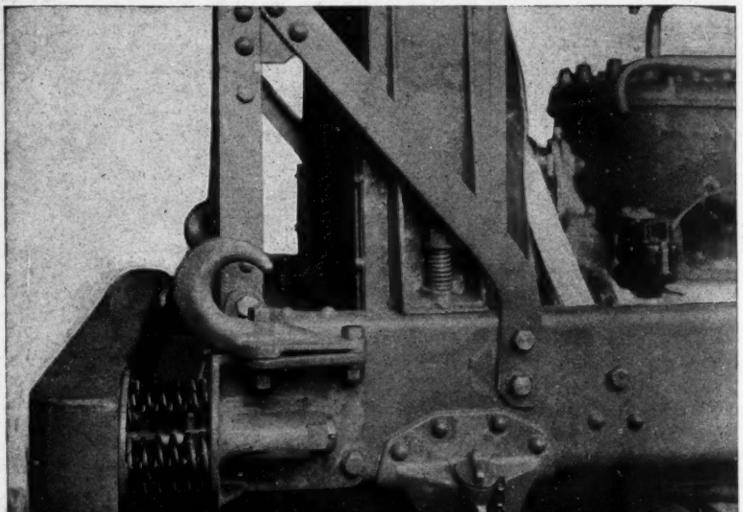
Rear spring shackles and brackets. Each bracket has an oil reservoir with wick feed to the spring bolts. Oil feeds only when there is motion and the brackets contain enough to last for many months without attention. The oil has no way out except through the wicks and so it cannot leak



While there is nothing unconventional about the front axle, it is husky without being heavy

The gang that built the truck at Rochester. Almost conti nuous work for four days and nights in the completion of a fine engineering job gives them all something done for Uncle Sam they may be proud of all their lives

The driver's compartment, which has more room than this picture suggests. The tank on the dash holds 15 gal. and is the main supply of gasoline. Seat, floor boards and dashboard are of sheet steel welded at every joint, making a light but strong construction



The radiator bolts have coil springs under the nuts, allowing the radiator to move sufficiently to compensate any frame weave. The massive spring bumper and towing hook are special designs of the War Department. It certainly would need a very violent collision to do any damage to the front of the truck thus protected

In laying out the brake connections great care has been taken to plot the paths of the brake lever eyes as the spring deflects, and the cross shafts, of which there are two, are placed so that axle movement will have a minimum of effect upon the brakes. To compensate for torsional deformation of the spring the axle brake levers are carried up till the eyes are nearly in line with the top plate of the spring, thus resulting in spring deformation causing an up and down movement of the levers instead of a horizontal one, and the vertical movement does not affect the tension on the brake rods by this method.

The rest of the chassis is quite conventional, the front axle being a normal kind of forging and the steering by worm and wheel. The main gasoline tank is set on the dash, feeding the carbureter by gravity and there is a reserve tank under the seat from which gas can be drawn off into a pail and transferred if necessary.

All the electrical gear except the magneto is specially designed, the ignition system being peculiar in that both the battery and the magneto operate together all the time. The lamps consist of headlights with glass reflectors giving an exceptional light although their diameter is small, and small side lamps for driving in the danger zone. These were designed from W. F. Bradley's account in MOTOR AGE of how the Italian ambulance drivers used old shaving soap boxes to cover small bulbs. They consist of tubes set at an angle of 30 deg. in the lower part of the dash, so that a little light is directed on the ground just ahead of the front wheels. Inside the tubes are dead black and the bulbs are near the back ends. No direct light can be seen from in front of the truck.

With the American Troops in France

W. F. Bradley Now an Expert on U. S. A. Staff Abroad

PARIS, France, Oct. 1—W. F. Bradley, for years special European representative of MOTOR AGE, has been signally honored by being offered a position as technical expert on the American Aviation Headquarters staff in France. Mr. Bradley has accepted the position. No one is better qualified for such as position than Mr. Bradley, because he has followed aviation development from its inception in Europe and has lived with it in the French capitol. Not only has he been familiar with all of the activities in the French aviation factories, but he recently has made two visits to the Italian factories in his service connected with MOTOR AGE. He has had entry to all factories in France, Italy and England for many months, and while his articles have told of the general development of aviation, his experience has given him much information of a confidential nature which could not be published.

The Liberty Engine

It is a signal mark of distinction that it was an article by W. F. Bradley which drew the attention of America to the necessity of standardizing the aviation engine and which resulted in Major J. G. Vincent, then plain Jesse G. Vincent, Packard engineer, coming to the conclusion that if America was to get into the war and do her part in aviation she would have to put aviation engine production on a new plane. This resulted in Mr. Vincent's going through Mr. Bradley's article very carefully and concluding that if France had thirty-four different aviation engine models the United States immediately must get busy developing one standard engine. This was the real inception of the Liberty engine. Within 6 hr. after reading Mr. Bradley's article Mr. Vincent started for Washington to lay the foundation for what is now the Liberty engine.

Since the outbreak of the war Mr. Bradley has been constantly in military service. In the fall of 1914 he spent most of his time driving officers' cars on the French, England and Belgian fronts. Later he had very extended experiences as an ambulance driver with the Italian army and for months was located in the city of Gorizia, where he was operating constantly in advance of the heavy Italian artillery and where he was under constant fire from the long range Austrian guns. At that time he made a very careful study of the Italian motor truck equipment as well as their ambulance service, and his many articles have made up the best contribution to motor war literature that has been published on this side of the Atlantic. His articles on organization of motor truck units and also ambulance units have been particularly constructive.

In his new field of aviation Mr. Bradley is still closer coupled with his American reading clientele, and his many articles give a coloring to the motor in the war which cannot be had in any other way.

U. S. Draws on Plants

C. B. Rose, vice-president of Velie and for many years chief engineer, has gone to Washington to serve in the inspection bureau of the Signal Corps. He has been granted leave of absence for the period of the war.

James W. Florida, assistant manager of the Philadelphia branch of Locomobile, has been commissioned a major of infantry attached to the Motor Transportation Corps. Mr. Florida was in charge of motor transportation at Columbia, N. M., during the punitive expedition into Mexico. Many will remember as the team-mate of George Robertson when the Locomobile won the Vanderbilt in 1908. Mr. Florida will be stationed in France.

H. L. Dickey, general sales manager for Moto-Meter, is now a captain in the Army. Mr. Dickey holds his commission in the motor division of the Ordnance Section.

J. G. Perrin of the Timken-Detroit Axle Co., is now in the equipment division of the Signal Corps at Washington, in the plane design section.

Joseph Bourquin, production manager of Liberty, has joined the truck department at Washington.

George W. Smith, Jr., is now with the aviation department of the United States, having resigned as assistant consulting engineer of White. He will be located in Philadelphia.

Russel E. Gardner, Jr., sales manager, and Frederick W. Gardner, factory manager, of the Chevrolet Motor Co. of St. Louis, have enlisted in the navy as ensign and engineer. They are sons of Russel E. Gardner, chief owner of the Chevrolet Motor Co. of St. Louis.

Eddie Rickenbacher Becomes Full-Fledged Aviator

PARIS, Oct. 11—Eddie Rickenbacher, formerly race driver but more recently with Pershing in France, completed his aviation training this week and received the French brevet certifying him to be an efficient air pilot. Rickenbacher went through the course in five weeks, handling a 200-hp. Caudron biplane, and got his certificate without breaking a spar or straining a wire. The usual time spent in the training schools is three months. As a consequence of getting his pilot's certificate, Rickenbacher has secured the rank of full lieutenant and has been made chief of the mechanical department of one of the big American aviation schools recently established somewhere in France.

Eat Plenty—Eat Wisely—but Without Waste

Hearne Wins Uniontown

Takes 168-Mile with a New Track Speed Mark of 92.84 m. p. h.

Cars of Henderson and Chevrolet Crash Into Rails

UNIONTOWN, Pa., Oct. 29—Special telegram—Eddie Hearne won the 150-lap, 168-mile, Autumn classic here this afternoon, hanging up a new high speed record for the Uniontown track. Hearne made the grind in 1:49:02.45, at an average speed of 92.84 m.p.h.

The former record was held by I. P. Fetterman, an amateur, who drove a 100-lap dealer's race July 4, at an average speed of 92 m.p.h. Hearne's Duesenberg was the only car to make a non-stop race. After leading the field from the seventy-third lap, Pete Henderson, in a Duesenberg, bumped into the inner guard rail on the 114th lap and was put out of the race. He was a half lap ahead of the field. Milton was driven from first position in the 147th lap by a flat tire but at the time held a lead of a lap and got back in the running in time to claim second position at the finish.

Gaston Chevrolet and his mechanic, Sal Barbadini, were both injured to some extent in the 112th lap, when the Frontenac left the track on the back stretch.

Ralph Mulford held the lead with his Frontenac for one lap, the 46th, and went out permanently the next lap with engine trouble. Gil Anderson took his Miller off the course in the 115th with engine trouble. Fred McCarthy won the 50-lap consolation event in which six cars were entered and also came in a winner in the 50-lap match race in which Dave Lewis, in a Hoskins, and I. P. Fetterman were entered. The three finished in the order named.

Autumn Classic, 168½ Miles—Average 92.84 m.p.h.

DRIVER AND CAR	TIME
Hearne, Duesenberg	1 :49 :02.45
Milton, Duesenberg	1 :49 :27.45
Vail, Hudson	1 :54 :37.05
Lewis, Hoskins	1 :55 :24.03
Hickey, Hudson	1 :56 :58.11

Consolation Race, 56¼ miles—Average 83.3 m.p.h.

DRIVER AND CAR	TIME
McCarthy, Hudson	38 :20.18
Conway, Hudson	38 :20.75
Shoff, Haynes	42 :39.58
N. Fetterman, Haynes	43 :43.49

U. S. A. Challenge Trophy Race, 56¼ Miles—Average 93 m.p.h.

DRIVER AND CAR	TIME
McCarthy, Hudson	36 :12.61
Lewis, Hoskins	36 :16.79
I. P. Fetterman, Peerless	36 :48.34

TO TEST MAIL TRUCKS

Washington, Oct. 27—Washington is to be the radiating center for the first big experiment by the Postoffice Department in interurban motor transportation of parcel post mail, the idea of the Department being, ultimately, to extend this service between many of the cities, thus bringing the producer and consumer in close touch. The initial route is to be between Washington and Baltimore, a distance of 40 miles. One motor truck will leave both Baltimore and Washington at 6 o'clock each week day morning. These two trucks will meet midway between these two cities and also meet a third truck covering territory not reached by these two. The three will exchange their packages and start back to their respective bases, reaching there at 2:30 o'clock in the afternoon. This will give time for delivery of orders by wagons in the main cities.

THIS SPEEDWAY FATTENS HOGS

Minneapolis, Minn., Oct. 27—The receiver for the Minneapolis speedway has leased part of it for a hog farm. The food for the hogs will be furnished by the Fort Snelling garbage can and skim milk from dairies.

NO BRITISH TRACTOR APPROVALS

London, Oct. 15—There is no truth in the report that the British government has approved any special types of farm tractors, which report has been current for some time. It is a fact, however, that orders in considerable quantities have been placed with many tractor makers. No tests have been made in placing these orders. Generally the tractors were ordered in small quantities at first and if they proved reasonably satisfactory orders in increased quantities were placed. All orders were placed by the board of agriculture or the food production department. The necessity for securing the machines quickly did not permit of any extended trials of the machine. The Ford machine, however, was tested by the Royal Agricultural Society of England, but no tests were made of other makes. Among the different tractors which have been ordered in varying quantities, are: Ford, Titan, Mogul, Samson, Sandusky, Emerson, Agrimotor, Saunderson and a creeper type. Several of the latter machines are English products.

Race Headliners Wanted

New Organization Would Book Speedways and Co-operate in Speed Events

Lack of Prominent Names Speaks Badly for Success

CHICAGO, Oct. 29—A neutralizing potion seems to have been injected into the plans exposed last week by MOTOR AGE for organizing speedway race drivers into a body to be known as the National Grand Circuit of American Speedways. C. W. Johnson, president of the Uniontown Speedway Association, has been looked upon as the promoter of the plan, although his name has not been officially given as the controlling executive. Some of the western speedway managers were visited by Johnson last week, and he outlined to them his plans, which he says are not such as to militate against the American Automobile Association but rather are those of co-operation between that body, the American Speedways Association and the new organization.

Briefly, Johnson's plans, as nearly as can be learned now, are these: To bring together a field of twenty-eight or thirty, or perhaps more, drivers, all of whom would drive under the management of the new organization, which, of course, has its rules and regulations that are strictly iron-clad and provide for suspension, fines and expulsion for a violation of any of a certain list of defined infractions, this field of drivers to be entered, furnished with cars, and financed, thus giving to speedway managers assurance of a large field of starters for each event.

Johnson says this would be helpful to the A. A. A. and the American Speedways Association instead of detrimental, and that there is nothing of the outlaw atmosphere to the proposed organization of which he is the attributed head.

There are certain objections to the plan.

The British tank "Britannia" swinging into line in the Liberty Loan parade in New York just in front of the Flatiron building

Our Soldiers Need All the Food We Can Save

Granted that the new organization is not of the caliber to be branded "outlaw," and that it is to be more of a booking agency for speedway racing, with this its chief purpose, it is difficult to conceive how such an organization could have the drawing power that race entries that included such names as de Palma, Resta, Aitken, Anderson, Cooper, Louis Chevrolet and others of that standing have had. It would be as reasonable to expect Klaw & Erlanger, the Western Vaudeville Association, Keith's or the Orpheum Circuits to succeed in interesting the vaudeville-going public without a headliner. It would be small-time acts. The new organization has not in its membership the name of a single speedway champion and few of those who have become more or less known in the last two years.

TO AUCTION AUTO PARTS

Chicago, Oct. 27—The supplies and accessories of the Auto Parts Co. will be auctioned off, commencing Nov. 13. The inventory value is $300,000. Frank M. McKey is receiver and Samuel L. Winternitz & Co. are the auctioneers.

BONDS INSTEAD OF A SHOW

Fort Dodge, Iowa, Oct. 26—At a meeting tonight of the Fort Dodge Automobile Dealers' Association it was unanimously voted to invest the estimated cost of the 1918 show in Liberty Bonds and dispense with the show. The association takes $10,000 in bonds.

WILLYS-OVERLAND EARNINGS

New York, Oct. 29—It is estimated that Willys-Overland will earn in the neighborhood of $9,000,000 for 1917. The third quarter of the year was big both as regards sales and profits, but the final three months, owing to smaller shipments, changes in inventory to care for the new car, and factory rearrangement necessary for the Curtiss company and new car operations, will not be a very big factor in the net earnings.

TESTS FOR TRACTORS OUTLINED

Chicago, Oct. 27—At the meeting of the National Tractor Demonstration Committee, held here to discuss the tractor demonstrations for next year, a motion was made and carried to have one big national tractor demonstration in 1918, incorporating the following tests: Fuel consumption in plowing, disking and other field work; different types of traction wheels, wheel equipment and tractive efficiency, to include tests running wheels in furrow, on unplowed ground and on plowed ground; steering mechanism; and belt work.

At least one 10-hr. plowing run will be held during the demonstrations. The committee decided to sanction not more than five other demonstrations at points to be decided later, which will be conducted along the lines of previous demonstrations but not include any tests. The demonstration will be held in the vicinity of Detroit or Cleveland, if suitable land can be found. From 3000 to 5000 acres will be required in one body or made up of adjoining fields.

Expect Air Board Change

Coffin Almost Certain to Head New Organization of Production Body

Other Positions for Foulois, Bolling and Waldon

CHICAGO, Oct. 29—Reorganization of the aircraft production board is expected daily at the hands of the President, who will name a civilian chairman and two other civilian members. The reorganized board will include, for the Army, Major-General Squiers, Colonel E. A. Deeds and Colonel R. L. Montgomery, and for the Navy, Rear Admiral Taylor, Captain N. E. Irwin. Lieutenant-Commander Arthur K. Atkins, now on the board, will not be retained. Brigadier-General Benjamin D. Foulois, Colonel Raynall C. Bolling and Colonel D. H. Waldon of the Army, now on the board, it is said, will be retained in important capacities in connection with airplane production but will not be members of the reorganized board.

Howard Coffin almost certainly will be made civilian chairman of the board, succeeding himself. The work which General Foulois and Colonels Bolling and Waldon will do, it is stated, is for good reasons being kept secret.

Builders of airplanes and parts look to the future with new activities. Orville Wright is conducting extensive experiments on a low powered airplane for practical use after the war. It is his desire to provide a plane that bears the same relation to flight as does the Ford car to travel on the ground. It is hoped to increase the efficiency of the wing surface and to provide inherent stability to such an extent that with a 100-hp. engine the machine will require but a small place for landing or starting.

The Kessler Motor Co., Detroit, which was formed in May to make a 6-cylinder airplane engine, now has several engines through production and is conducting a series of tests at its plant. This engine incorporates several new features, having four valves per cylinder and utilizing the compression of the crank and crankcase to supply an additional amount of air at the completion of the intake stroke.

No Passenger Cars in Coal Rail Stock

WASHINGTON, D. C., Oct. 29—Special telegram—Beginning Nov. 1 passenger cars will not be allowed to be shipped in open-top railroad cars such as coal cars and gondola cars. This order has been issued by R. S. Lovett, priority director of the War Industries Board, and has been made to increase shipment of coal throughout country as necessary. It was found, for example, that coal production has been restricted due to shortage of cars. One large motor car concern has been shipping 60 per cent of its cars in coal cars. Other coal cars have been used for shipment of road-building material, Ohio alone having 6000 carloads of road-building material a week. By these and other restrictions it is hoped to increase the coal supply 600,000 tons a week. The importance of increasing the coal supply is realized when it is due to a lack of coal that Italy has had to withdraw and suffers the heavy defeat she has experienced within the last week. Coal is so important that it must receive every attention.

The Government also has forbidden the use of open-top cars for the transportation of materials and supplies for the construction, maintenance or repair of public or private highways.

BODY DISTRIBUTOR FORMED

New York, Oct. 29—The Commercial Motorbody Corp. has been organized to act as a distributor of commercial motor bodies. It will represent nearly 100 companies, according to its present plan, and will issue a catalog showing 400 different types. Under the present plan, each manuf turer sends his own catalog to the dealer with his own assortment of styles. This new corporation plans to include all styles in its catalog so that a dealer's customer may have a choice of everything made in the entire trade.

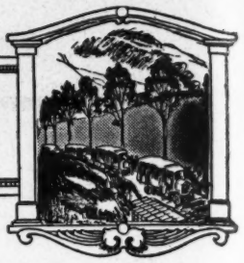
NEW YORK TAKES $12,447,050

New York, Oct. 29—Last week's Liberty Loan drive by the motor and allied trades in this city resulted in raising $12,000,000. The dealers and several of the big manufacturers raised $5,000,000. This added to the $4,000,000 subscribed by General Motors, Chevrolet, and United Motors; the $2,000,000 taken by the Packard company, and the $1,447,050 by General Electric, brought the total up to $12,447,050. A final count on the Liberty Loan work of the motor field has not been made and it is expected that the total will eclipse these figures.

CHICAGO SUBSCRIPTIONS $969,350

Chicago, Oct. 30—The Chicago Automobile Trade Association's membership responded to the extent of 100 per cent in the association's campaign for the sale of Liberty Loan bonds, subscribing a total of $969,350. One hundred and twelve members reported 100 per cent sales among their employees, and none of the members less than 20 per cent. The largest subscription coming from one member is that of the Warner Lenz Co., which turned in $71,100; the Packard Motor Car Co. is second with $66,600; the Stromberg Motor Devices Co. third with $43,600; the Harry Newman-Stratton Co. fourth with $36,550; Beckley-Ralston fifth with $25,000, and Cadillac Automobile Co. sixth with $23,650. Of the total of over $969,000, $8,300 in subscriptions were received through the Chicago Garage Owners' Association.

EDITORIAL PERSPECTIVES



War and the Truck

IT IS barely possible there will be a shortage of motor trucks due to the large demand for them in the war. The added capacity of the factories will more than take care of this extra load imposed by the war. Many factories building passenger cars and trucks are cutting down very heavily on the passenger car business and taking up the slack with trucks. With the passenger car business of the country off anywhere from 40 to 50 per cent there has been freed a great amount of manufacturing capacity which can be used for trucks. With parts makers this has been apparent for some time, as the shortage of materials and parts which seriously handicapped truck makers some months ago has passed entirely, with the possible exception of parts for such models that are in direct competition with the new heavy-duty war truck.

IN addition to having plenty of heavy- and medium-duty trucks the country is going to have for the first time light delivery vehicles in large quantities. Ford has announced an output of 50,000 delivery vehicles. Maxwell will make 20,000 light trucks. It is not known exactly how many Dodge Brothers will produce. But these three will undoubtedly produce more light vehicles than there were trucks of all makes sold in the last twelve months. The light delivery field should make greater progress than it has ever made before. This vastly increased output of light deliveries, coupled with the shortage of labor and the shortage of horses, should result in an unprecedented growth in this field. The small retailer is going short on help now and will go shorter. The waste of retail delivery is going to make many changes. Many retailers will either have to mend their ways or consolidate with their stronger brothers.

FROM all parts of the country come reports that motor car dealers are more anxious this fall to take on truck and delivery car agencies than ever before. This is due to the dropping off in the passenger car trade, but it is also due to the increase in the light truck and delivery car business.

War Truck Influence

ALTHOUGH it took months to convince thousands in the motor truck industry that the new standardized heavy-duty war truck would have a beneficial influence on the truck situation in America, the completion of the truck and its performance to date have convinced the most skeptical. The truck is just what is needed in these days of war-demanded efficiency. It represents better engineering than could possibly come out of any single American factory with its present engineering organization. It represents the solution of engineering questions that have not previously been solved in our assembled truck field. The question of gear ratio as entering into the gearset design is but one example of this. The happy combination in the engine of the best lubrication system, the best combustion chamber design and the best piston design for trucks is but another of the many examples that could be cited.

THE truck should prove a boon to builders of assembled trucks, as they now can obtain units of the most approved design, the work of a corps of engineers drawn from several factories. Already truck assemblers are altering specifications to make them correspond with the war truck specifications. This should assure them a ready supply of parts, as makers of the war truck units are sure to keep them well stocked. The Government practically will make such imperative. Having such parts regularly stocked should result in lower prices than where parts are special or not so popular as war truck parts will prove to be.

IT will be fortunate if the war truck enters largely into commerce; in fact, the Government hopes this will happen. Should any emergency arise it then would be possible for the Government to draw from certain industries other trucks of the same design and characteristics as the war trucks, so that the hopeless confusion and waste of effort which comes from heterogeneous convoys would be avoided. Business houses naturally would look favorably upon the war truck models of different concerns, as they would have a certainty of spare parts for practically all time to come.

Motor Truck Tires

THERE is a growing opinion in favor of the very large solid rubber tires for rear wheels of trucks as compared with duals to carry the same load. The large single has been on the market for many months and is establishing itself. It is now three years since some of our largest tire makers announced they favored certain sizes of singles as compared with duals intended for the same load. Many owners using large singles report that there is greater resilience, which should come as a result of the greater amount of material, provided the resilience factor is the same in the material used in one as in the other.

RUBBER is a very sensitive material and its very nature, namely, to cushion shocks and reduce noise, makes it a victim of overloading and overstraining which is very difficult to correct. The life of a rubber tire may be almost cut in two by one bad bump, such as striking upon a sharp stone or piece of metal. Often the dual tire is handicapped in that one of the tires has to carry the entire load, as when traveling on a rough street. This is frequently seen on some street car lines. There is, of course, injury where the entire load has to be carried on one tire which was only intended to carry half the load.

Truck Engineering

EACH year sees more definite steps in truck engineering incorporated into the trucks in use. For fourteen years this gradual transition from trucks made up almost exclusively of passenger car units to today, when the best trucks are almost entirely composed of specially designed truck units, has taken place. The last eighteen months has witnessed many changes. The Mexican campaign was a potent chapter in this relegating of passenger car parts and the use of special truck parts. One year ago many trucks had engines that were really robust types of passenger car engines, as they are the outcome of those border experiences. The Mexican border work proved that trucks must have more positive lubrication systems in engines than will suffice in scores of makes of passenger cars. The crankshaft that may prove satisfactory in the passenger car will not do for the truck. The truck engine must have larger bearings or greater bearing capacity. Different features in piston design are needed; in short, the truck engine of

today is a vastly superior service engine than the passenger car job. The passenger car engine was not good enough for the truck. On the other hand the truck engine is good enough for the best passenger car, although to get that higher speed and flexibility certain modifications would have to be carried out.

THE same is true of gearset design. For years the large percentage of our trucks have used gearsets that really were designed for passenger cars. True, the shafts and gears were heavier than in the passenger cars, but the fundamentals of design had been worked out with the passenger car problem more in mind than the truck problem. This has been a handicap on truck performance up to the present. Our trucks never have been favorably compared with the best European designs in performance and engine efficiency. In Europe the engine is intended to work at its point of maximum efficiency when pulling the truck with load on a good level surface. In America the engine has been loafing under similar load and road conditions, and there has not been engine efficiency that could be compared with the European efficiency. This rapidly is passing, thanks to the war truck, which already has accomplished wonders in this respect.

BUT there are many other respects in which new thought is entering into truck design. Springs have been improved amazingly and now the lessons learned in spring design in passenger cars are being applied to trucks. Today the long flat truck spring very generally is replacing the heavily arched shorter type. Better steels are entering into truck springs. The pressed steel frame has made quite pronounced progress. Attaching the body without drilling the top or bottom flange of the frame is gaining and represents much experience with weakened frames due to promiscuous drilling of the flanges.

THIS change in truck engineering, does not mean there are two separate schools of engineering, one for trucks and one for passenger cars. The basic principle involved in the truck question is practically the same in all respects as that in the passenger car. The difference in the two schools, if it may so be designated, is a difference in the degree to which different fundamentals must be carried out. For example, the balanced crankshaft is just as essential in the truck as in the passenger car, the racing car or the airplane, but the truck must have a stouter crankshaft than the passenger car, because the latter does not work at its full engine capacity for long periods, whereas the truck may be pulling its full load for long periods.

AGAIN forced-feed engine lubrication is desirable in the passenger engine, and we might say necessary in the truck, tractor and airplane engines. The difference is due to the more severe service in one case than in the other—not a difference of engineering fundamentals but only in degree of application.

INSTEAD of truck and passenger car engineering drifting asunder the two schools to accomplish the best must come closer together. In the best regulated factories, where there is a very competent motor car engineer, he is handling the major problems in the truck. For example, a good engine man for a passenger car is also a good engine man for the truck. It is fortunate that this is the case, because the problems involved are alike. For example, the application of heat to the mixture applies in one as in the other. The piston design should be practically the same; in other words, the fact that a truck carries a load and has more vibration than a passenger car does not alter the essentials under which a piston works, so that the designer who thinks the problem of piston design diametrically opposite in the truck and passenger car fields will find himself at variance with many of our best engineers. Truck and passenger car engineering are alike and they are different—they are alike in essentials, in fundamentals and in first principles and they are different in the degree of application of these.

Truck Starters and Crankcase Lubrication

THERE is a growing demand for electric starters on trucks used for delivery work where in house-to-house work the delivery may make 150 to 175 stops a day. The electric starter plays a distinctive role in such work. There is even a demand for the starter in certain 3- and 5-ton truck lines, notably such as ice cream delivery, where there are a great many stops of considerable duration. On large trucks in general freight transportation with few stops there is no necessity for the starter and the majority of the manufacturers are standing out as solidly as ever against the starter.

THE battery is a big problem with the truck, but now that battery makers are bringing out war truck models it is expected that perhaps this problem will be minimized. During the last year the majority of the truck makers carrying starting batteries on trucks with solid rubber tires have had their problems. With some it has been broken plates and cells and others general troubles. Those who mounted the battery on the running board now are mounting it under the seat at one end of the gasoline tank. There is generally good space under the seat for the largest gasoline tank, the battery at one end and a tool space at the other; that is, if the seat box is carried out at each end and made as long as the seat.

THERE is a confusion of opinion as to the best method of supporting the battery on a truck. One maker swears by his system of mounting it on springs. Another uses a double bottom for the battery tray with rubber pads between the bottoms. A third says the great essential in mounting a battery on a truck is to fix it rigidly in the tray without any springs. If rigidly mounted no strain is placed on the terminals as there is when it is mounted on springs, and many think this strain on the terminals has something to do with breaking the plates and generally upsetting the battery efficiency.

WITH cold weather approaching, truck owners and those selling trucks and those handling garages where trucks are stored must meet the problem of crankcase lubrication due to dilution from the heavier particles of the gasoline not being burned in the cylinder but leaking past the piston ring and mixing with the crankcase oil. This was a very serious problem last year, and it is going to be just as serious this year unless you prepare for it.

LAST winter analysis of crankcase lubricant showed as much as 45 per cent of it to be kerosene and in some cases only 37 per cent of the lubricant was really effective lubricant. Truck owners met the situation last winter by changing the lubricant in the crankcase every week in real cold weather, changing it every two weeks in medium and cold weather and changing it every month in the summer. This was not entirely satisfactory and at the same time was expensive. In addition, many owners added hot air pipes to carbureters and made adjustments to meet the new conditions.

THE leakage of the heavier kerosene into the crankcase largely takes place before the engine is heated up when starting after a cold night or long stop. Practically all of the damage is done in the short time needed to get the engine warm. Here is about what happens: The heavy kerosene particles in the fuel are not vaporized when drawn into the cylinders but really enter as globules of kerosene. In the combustion they are not burned but collect on the cylinder wall and cut off the film of cylinder oil. With this film gone it is reasonably easy for the kerosene then to work its way down past the piston rings. Once the oil film is completely cut off it takes some time for it to build up, especially with the kerosene particles working against it. As soon as the engine is hot the fuel is handled better, the kerosene particles are perhaps almost or entirely eliminated and the crankcase lubricant is no further injured, but by this time the injury has been done. It takes only a few minutes each morning to do the job.

Year Not Prolific in Truck Design

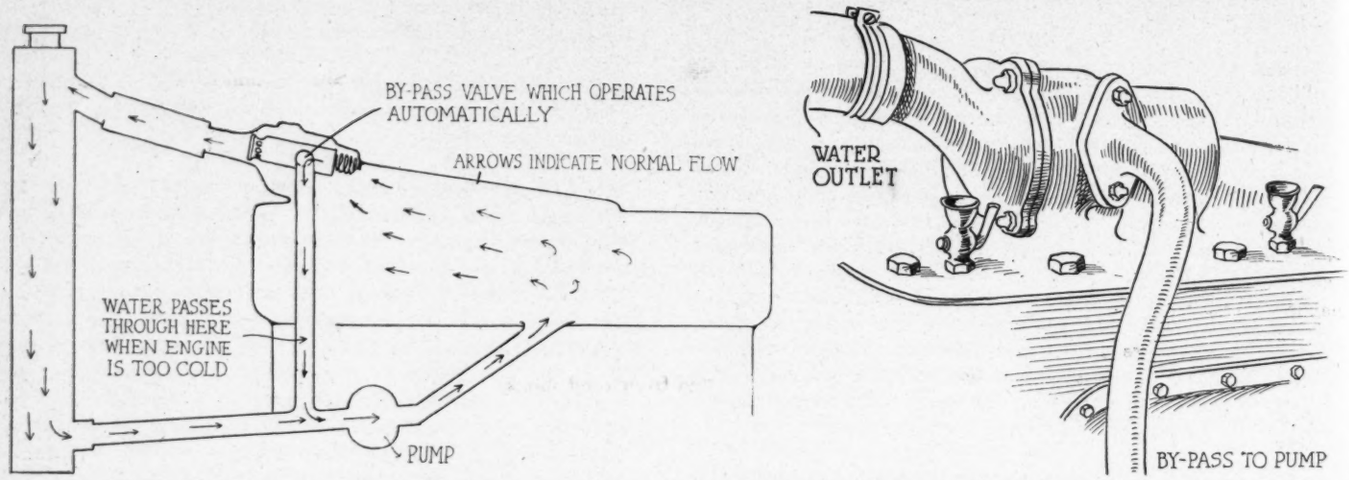

BY-PASS VALVE WHICH OPERATES AUTOMATICALLY
ARROWS INDICATE NORMAL FLOW
WATER PASSES THROUGH HERE WHEN ENGINE IS TOO COLD
PUMP
WATER OUTLET
BY-PASS TO PUMP

Fig. 1—Thermostatic water control on Packard, showing at the left normal circulation of the water and the by-paths which short-circuit the radiator when the engine is too cold

Standardized Heavy-Duty War Truck Feature and Handling Heavy Fuels Chief Commercial Problem

By David Beecroft
Directing Editor Class Journal Co.

IF the standardized heavy-duty war truck is not included, the year of 1917 has not been prolific in truck development. It scarcely could be expected that truck manufacturers would expend dollars and effort on new models when production is behind demand. Yet there are many problems that nearly every truck maker is struggling with—you get face to face with them in most of the factories—and it will be some time before they are solved.

The handling of heavier fuels, not to mention kerosene, has thrust a man's job onto the truck industry. In the cold weather last winter truck makers and dealers were counseling owners to change the crankcase lubricant every week in cold weather and every two weeks in medium weather. The heavier fuel units were getting into the crankcase by leaking down past the pistons. This all took place while the engines were cold. It was a new problem last winter, but with present fuels with heavy units in them the problem will be with us this winter and the truck owner must either spend $2 or $3 per week in new crankcase oil or fit some attachments that will insure good carburetion while the engine is cold as when starting up in the morning or after a long stop.

Stopping Crankcase Dilution

The first effort to stop this crankcase dilution is a call for hot air pipes for manifolds, better fitting of piston rings or new pistons. There are many ways in which the makers are trying to solve the problem. Some makers have filled specially long pistons and have an extra ring at the upper end to prevent the condensed heavy fuel units from leaking past the piston. More makers could follow this example to advantage. It is attempting to solve the problem in the right way, namely, by design rather than by outside means.

The thermostat is looked to by several, even if they do not use it at present. The thermostat that will control a shutter over the radiator is not yet in use on trucks, although it is used on passenger cars. This type of thermostat control which regulates the air entering through the radiator only will have a very beneficial effect in cold weather, but it does not meet all the requirements of motor trucks operating in cold weather when it is hoped that a higher operating temperature can be obtained which will give increased fuel efficiency.

Another form of thermostatic control is that used by the Packard, which is a thermostat controlling water circulation. This has been used for some time and is fitted to all trucks. It is similar to that used on the Packard. Fig. 1 shows the scheme in which the circulation of water from the jackets to the radiator is controlled. When the engine is cold the circulation through the radiator is practically cut off until such time as engine temperature rises, the thermostat gradually cutting in the radiator.

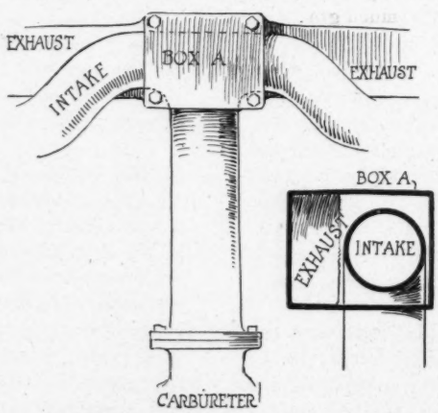


Fig. 2—Design of hot-spot manifold in which intake and exhaust manifolds are separate except the top of the vertical part of the intake, at which point the manifolds are brought together, preventing condensation at the point where it is most likely to occur

The dilution of crankcase lubricant in cold weather has led to many hot air attachments such as hot air pipes from exhaust manifolds to the carbureter, etc., and the Nash system is perhaps as complete in this respect as any. In this system the carbureter is hot-air jacketed, the air being taken from a stove surrounding the exhaust manifold. In the hot air pipe to the carbureter jacket a control valve is interconnected with the throttle, so that when the throttle is wide open the hot air supply to the carbureter jacket is cut off; and for low speed running when the throttle is partly closed, and more heat is needed in the carbureter, the hot air pipe is open.

Taking in Air

The complete supply of air for the carbureter may be taken from the stove on the exhaust pipe through a pipe, Fig. 4. This pipe draws its supply from the top of the stove, where the heat is greatest. In this pipe is an air valve controlled from the dash by which cold air can be drawn into the pipe. When starting only, hot air is taken, but this would give too low a volumetric efficiency in the engine and when the engine is warmed up cold air is taken in in necessary quantities.

N. H. Wahlberg, chief engineer of Nash, believes this control, or system of furnishing hot air, will overcome crankcase lubricant dilution because you get quick action through the system's heating up very rapidly. It is when the engine is cold and the heavier particles in the gasoline do not volatilize that crankcase dilution takes place. It may require only a short time to heat up the engine, but this time should be cut as short as possible, the shorter the better. It is during this time that the heavy fuel particles, which are really kero-

sene, cut the oil film off the cylinder walls, and the particles leak past the pistons into the crankcase. If this can be avoided, then crankcase dilution is eliminated.

Such a hot air system as the Nash, however, does not control water temperatures when the engine is running, and an ideal condition would be using with it some thermostatic form of water circulation control whereby jacket temperatures would be kept as high as desirable, thereby increasing engine efficiency.

Closely coupled with the question of control of engine temperature is that of using kerosene. In the entire industry little kerosene is being used. Scarcely a manufacturer is endeavoring to merchandise his trucks with kerosene using as a factor. They agree kerosene calls for special engine design and that while it could be used with engines at present it would be used inefficiently. The situation seems analogous with the farm tractor, where kerosene has been used but not efficiently. Some concerns have sold their tractors on the kerosene argument and later advised their customers to use gasoline.

Handling Heavy Fuel

Many truck engineers admit they are planning engines for still heavier fuels than used at present and that the proper handling of heavy fuels involves changes in engine design. Two or three engineers who are authorities in their work freely admit it would be expensive to use kerosene with present-day engines. They argue that the life of truck engines must be increased and that already too many truck engines are too expensive. Their maintenance is too great and that attempting to use heavier fuels with these engines would add to their maintenance cost, which would not be warranted.

To handle heavier fuels calls for fundamental changes in engine design. The combustion chamber perhaps must be changed in design in many cases and have what are known as hot spots removed. These hot spots might not cause pre-ignition with highly volatile fuels but would with the heavier fuels. Increased water circulation over the cylinder heads and around the valves is necessary. Increased water circulation around the spark plugs would be essential. Different piston construction whereby the heat would be drawn more rapidly from the piston head might

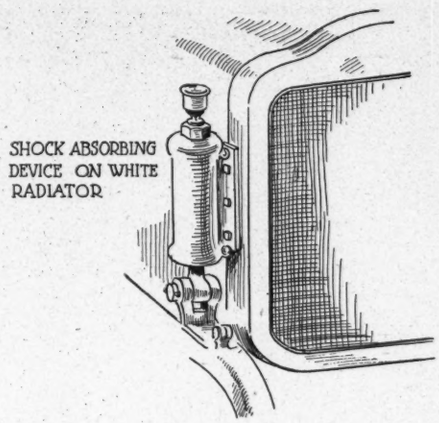


Fig. 3—How the radiator on the White is protected from road shocks

be needed. These are but a few of the many points mentioned by engineers which must enter into cylinder design to use effectively heavier fuels. When these changes have been made there will be many changes in manifolds and many in carbureters to make them more efficient with heavier fuels, and undoubtedly different forms of thermostatic regulation of water temperatures and thermostatic control of air current through radiators will be used. When these all have been brought together in some efficient way unquestionably truck efficiency will have been wonderfully increased and truck operation greatly improved.

One example of what might be called hot spot manifold design for truck use is shown in Fig. 2, in which intake and exhaust manifolds are separate except the top of the verticle part of the intake where the gases divide and turn right and left to the cylinder blocks. At this point the intake and exhaust are together, thus forming a hot spot and preventing condensation at this point, where it is most likely to occur.

Closely associated with the many problems of higher engine efficiency, using heavier fuels and thermostat control is that of the use of starters. Starters are making progress, and eventually they will be in much greater use than they are today. Those manufacturing light delivery wagons, where as high as 150 stops per day are made, are demanding starters. This at present is confined largely to light capacity vehicles, but the movement is spreading to heavier trucks, particularly those that have considerable stopping, such as trucks delivering ice cream.

There are constant rumors of starter difficulty with motor trucks. Many engineers blame the difficulty to the battery and others to the starter apparatus. Exponents of the starter, however, are manufacturing complete lines, such as Packard, which is fitting it on all models. The company firmly believes in it and looks to the time when all trucks will use it. Some truck makers report that electric starters as developed to-day generally have been developed for passenger car service and are not robust enough for the severer service they get on a motor truck which makes from 100 to 150 stops per day when engaged in certain deliveries. The average passenger car may have perhaps ten stops per day so that starter service on the motor truck is ten times or perhaps fifteen times greater.

Mounting of Battery

Much trouble with starters has been the battery, and this has been largely due to improper mounting of it. Some makers who mounted it on the running board have had much difficulty, and for next season the battery is being mounted in what is called the seat box, or the box on which the seat is mounted. Those who have mounted the battery on springs or rubber bumpers report varying results. One maker declares spring mounting has been a failure and spring action has resulted in strain on the terminals and consequent rupture of the plates or the jar. Another maker reports favorably. In three or four factories whose long laboratory tests have been carried out excellent results have followed from a rigid mounting of the battery, that is, anchoring the battery firmly into the trap so that it cannot vibrate against the tray and so eliminating springs and rubber pads. These companies agree this mounting is the solution of the battery on the truck. They mount the battery preferably under the seat or in the seat box, where there is generally room at one end of the gasoline tank.

One other trouble with batteries for truck use has been encountered, namely, overcharging of the battery, due to the engine speed being greater than the designers had anticipated. These makers discovered it was necessary to run the engines faster than anticipated to get the required horsepower. When this was done the generator was charging at over twice the ampere rate it was intended for. The bat-

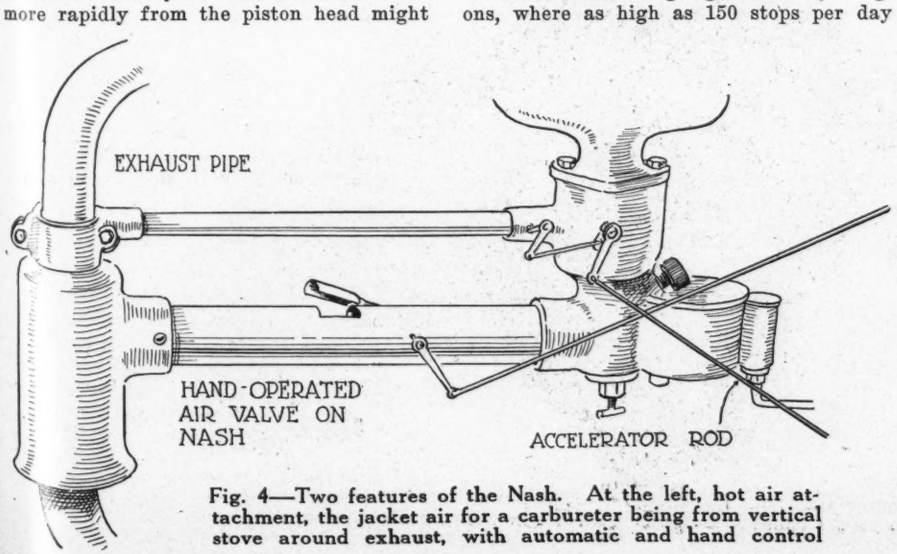
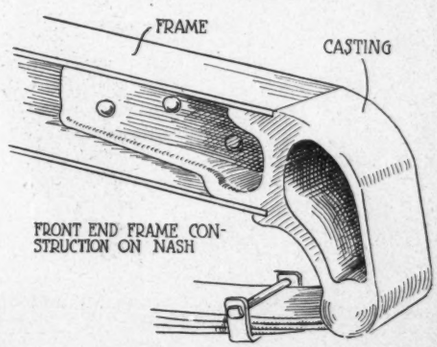
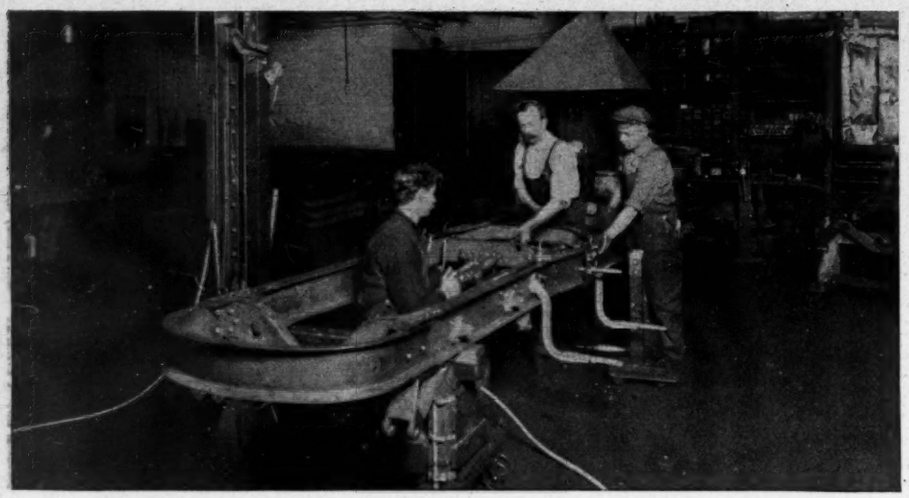


Fig. 4—Two features of the Nash. At the left, hot air attachment, the jacket air for a carbureter being from vertical stove around exhaust, with automatic and hand control





Sturdy frame construction of White truck

teries were burned out and prematurely destroyed. There are many problems similar to this which naturally will be met with before the starter probably is settled. It is accepted that with solid tires the starter problem in all its phases can be handled very practically. The battery problem should be assisted by what is known as war battery types now developed and under test and primarily intended for use in war trucks with solid tires.

Truck Strain Greater

There are many engineering problems connected with truck chassis which are quite different from those connected with passenger cars due to the greater strains imposed on the frame and transmitted to the chassis components through the heavy load to be carried and the use of solid tires with their greater vibration as compared with pneumatics. These improvements have to do with spring suspension, frame design, gearbox support, rear axle mounting and propeller shaft drive, all of which will be taken up.

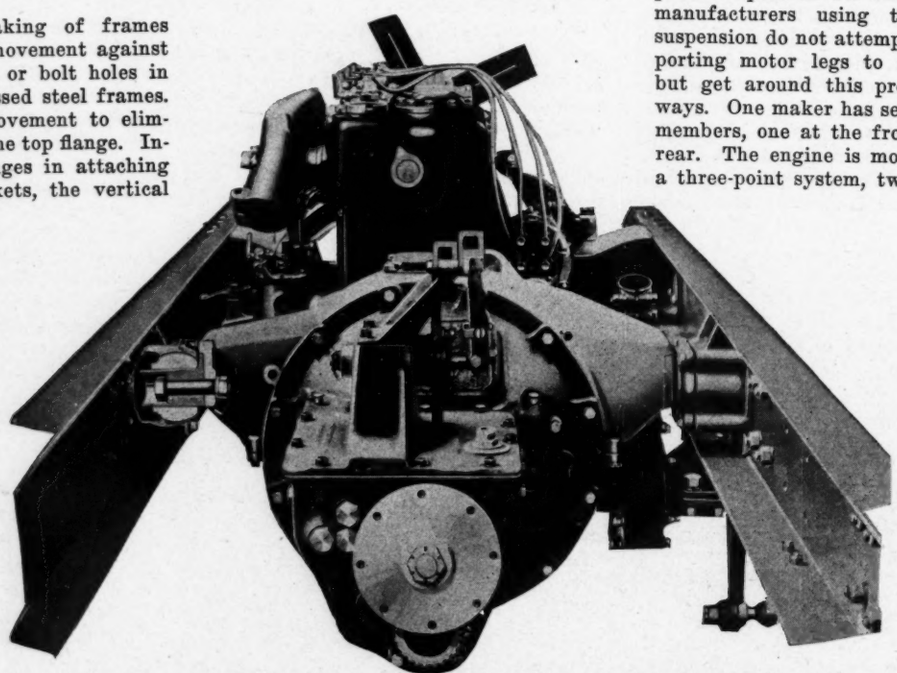
To eliminate the breaking of frames there is a very general movement against the drilling of any rivet or bolt holes in the bottom flange of pressed steel frames. There is also a great movement to eliminate drilling of holes in the top flange. Instead of drilling the flanges in attaching the body or frame brackets, the vertical section of the frame is being drilled instead. There is less weakening of the frame by this process. In nearly every factory, different methods of frame attachments are seen. One firm attaches the body by long U-bolts which encircle the entire frame and the wood sill on top of the frame. Another attaches a bracket to the vertical part of the frame and a corresponding bracket to the body. There is scarcely any end to the different bracket designs that accomplish this end.

Making the side member of the frame straight from end to end is gaining with many manufacturers. The narrow front is attained by a gradual taper from the rear to the front and in many factories the fact that the bottom flange of the side member is straight from end to end is referred to with great emphasis. A novel feature in design to accomplish this is used by Nash, in which instead of tapering the front end of the frame as is usual by carrying the top flange straight, Fig. 4, the taper is accomplished by keeping the bottom flange straight and sloping the top gradually down to the spring horn. This gives a shorter spring horn, thereby reducing weight in material. This design was developed on the British subsidy trucks some years ago.

One manufacturer instead of riveting the frames is using bolts. This is the Titan, a new Milwaukee truck designed by H. C. Millman, formerly with Stegeman. The argument advanced is that it is easier for the truck owner to make a frame repair where bolts are used than if rivets were employed. Perhaps another application of this same thought is met with in some truck factories where they are using several large-diameter rivets for attaching brackets to the vertical part of the frame instead of a greater number of smaller diameter rivets. There is less weakening of the frame by using the larger-diameter rivets and greater strength is obtained. The use of pressed steel for frames is gaining constantly. Makers are using heavier sections. The objection urged by some makers for using pressed steel frames is that it did not lend itself to different wheelbases required in the truck field. Some makers have overcome this by not attempting to taper the side member at the rear, but carrying it at its full depth and cutting off as necessary. Other manufacturers are coping with the problem differently and having the side member tapered front and rear and yet meeting different wheelbases. The frame maker does this by extending the center dies, which can be done readily provided the end tapers are not altered.

Engine Support Problem

Closely associated with the frame is the problem of engine support, which has been changed considerably by not a few makers in the last year. There have been many broken motor legs due to twisting of the frame side members, this in spite of three-point suspension for the engine. Several manufacturers using three-point engine suspension do not attempt to carry the supporting motor legs to the side members but get around this problem in different ways. One maker has separate frame cross members, one at the front and one at the rear. The engine is mounted on these on a three-point system, two rigid mountings



Method of engine support on Diamond-T. Here the bolt anchoring the engine legs to the frame is horizontal, with a ball and socket action

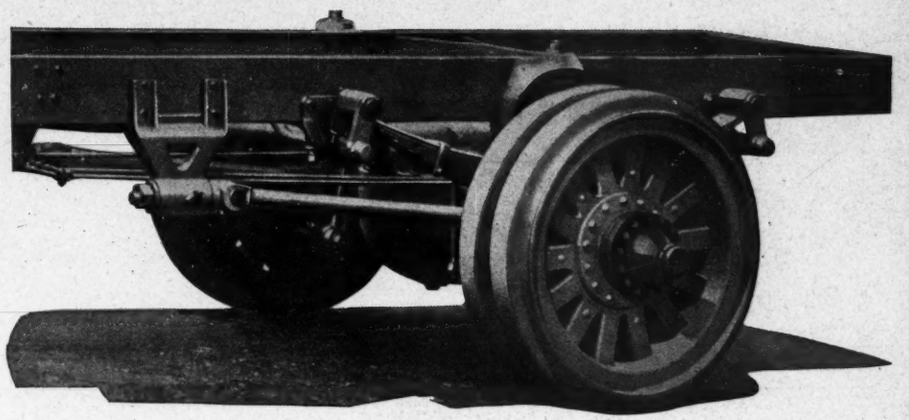
in the rear and one in the front. Where the cross member is used the crankcase is practically without supporting legs. The cross members are looked to to absorb many of the twisting strains which the frame has to bear. Other manufacturers support the engine on sub-frame members.

Among those who use a three-point engine support and carry rear supporting legs to the crankcase, different schemes of support are adopted. Some attach the legs to the frame through a ball-and-socket connection. An example of this is the Diamond-T, whose method of support is illustarted on these pages. Here the bolt anchoring the motor legs with the frame is placed horizontally rather than vertically. The horizontal bolt is used in place of the vertical bolt by other makers using this form of support but not having the ball-and-socket action.

The Nash is a three-point support in which the front end is not a trunnion but a fixed point. This uses frame cross pieces at the front and rear of the engine and looks upon these to take up the twisting strain which would normally be absorbed by the front trunnion support. There is an increased tendency to use forged cross members to carry the engine. This method of support was used by some passenger car makers.

Gearbox Mounting

Closely coupled with the question of engine support is that of forming the gearbox and engine as a unit and carrying them on a three-point system. Except for light capacity vehicles the unit powerplant system seems generally to be giving way to the policy of mounting the gearbox midship. This is very much the case with the higher capacity vehicles. There seems to be several reasons for it, and perhaps the most important is that it permits much greater accessibility of the clutch with the gearbox amidship than where it is a unit with the engine. In motor trucks the clutch receives much harder service than in passenger cars and consequently has to be refaced more frequently or given other attention. The truck is operating in traffic zones and the clutch may be used several times every block, whereas with a passenger car the service is much less severe. This matter of clutch accessibility is sufficient to warrant change in design to give desired accessibility.

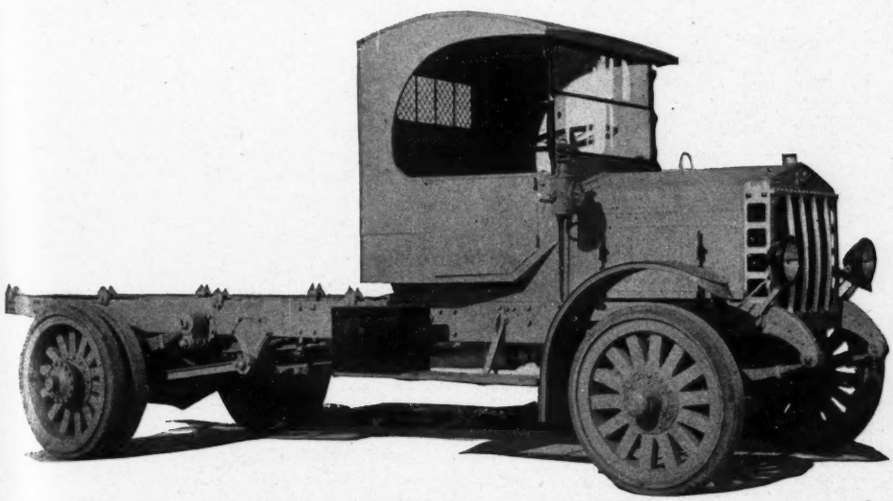


Hinged radius rod which features the new Oneida. Note thorough provision for lubrication

Another reason for mounting the gearbox amidship is that it aids in solving the propeller shaft problem. With motor trucks having long wheelbases whipping of the propeller shaft is one question to be overcome. Many manufacturers will not use a propeller shaft longer than 55 or 60 ins. Placing the gearbox amidship helps in reducing propeller shaft length, and where the propeller shaft length is not cut down this way several manufacturers divide the propeller shaft into two by a separate bearing in the middle of the shaft. This results in really two propeller shafts, each with its universal joints.

Some makers who have changed from unit powerplant designs to mounting the gearbox amidship have been led to do so to reduce strains on the engine supporting legs and thereby get away from the difficulty of broken crankcases.

Before dismissing the gearset mention should be made of the increased use of the four-speed set. It generally is admitted that four forward speeds are necessary on all heavy capacity trucks, such as 3-, 4- and 5-ton types, but the sentiment is gaining that the four-speed set should be used on 2-ton trucks as well. The four-speed set costs perhaps 10 per cent more, that is, it adds 10 per cent to the cost of the gearbox unit. It, however, gives many results. It gives more lower gear ratios and permits of better engine efficiency. With a four-speed set the smaller engine can be used because of the wider range of speeds. The smaller engine can be worked at better engine efficiency and so give more economical performances. Europe has been a pioneer in the four-speed gearset, the use of smaller engines due to higher fuel prices having made it almost mandatory. The use of four-speed sets in the standardized war trucks has given impetus to the trend towards this design.



Unusual type of radius rods on new Sterling. This also illustrates the radiator guard which war conditions has shown so necessary

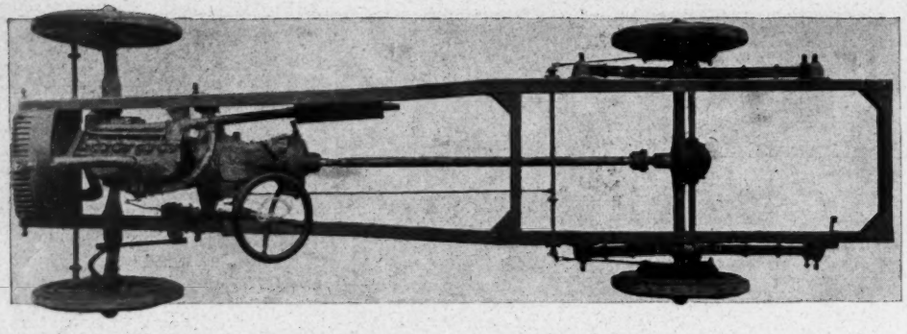
Propeller Shaft Break

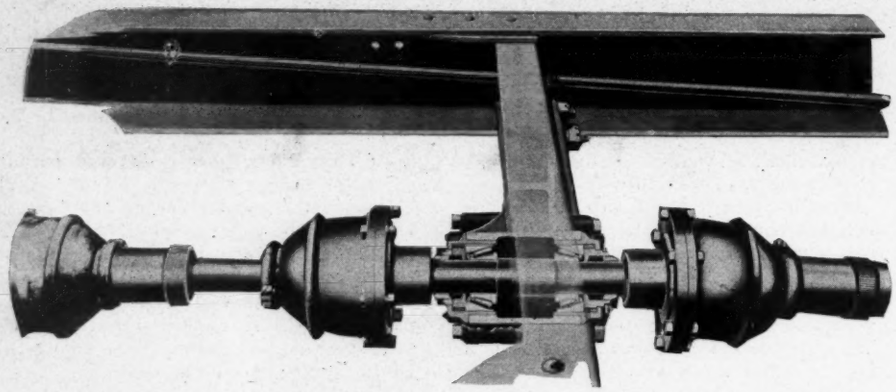
With the four-speed gearset mounted amidship a three-point system of suspension invariably is used. It is also possible to so mount the gearset that it can be removed by dropping, thus not calling for any dismounting of the body. The four-speed gearset also brings to attention the propeller shaft brake, which is being favorably looked upon by not a few makers who heretofore have mounted both sets of brakes on the rear axle. There is a simplification in design and consequent reduction in weight with the propeller shaft brake.

While the use of the divided propeller shaft is not new many concerns have been compelled to adopt it when the wheelbase exceeds 140 ins. The use, however, of the tubular propeller shaft has an influence on the problem. The larger the diameter of the propeller shaft, the less whipping there will be. Some truck makers are using tubular shafts as large as 2¾ ins. in diameter. Such a shaft can have more length without shipping than a solid shaft of the same length.

Closely associated with propeller shafts is the question of fabric universal joints, as compared with metal joints. The fabric joint has been tried by many concerns, Europe being one of the first countries to develop it. It is used very successfully by several manufacturers between the clutch and the gearbox. Its great advantage here is that the fabric disks do not require any lubrication, in fact, no attention whatever, and nothing more desirable could be wished for.

Back of the gearbox varied experiences have been had with the fabric joint, which points to the conclusion that the complete problem has not been solved and that engineers have yet to learn many details in





Two methods of overcoming the whip in propeller shafts. In light trucks with a long propeller shaft the whip is overcome by an exceptionally large cross-section of tube, as shown above. In larger units this is taken care of by three or four universals together with a center bearing. An exceptionally well-designed installation of this sort is shown below, in which there is a center double roller bearing in a frame cross member

connection with its use. There is no questioning its merit and its great desirability in truck use, but educational work with regard to its application will have to be carried out.

Perhaps no other problem seems to be on the truck manufacturer's mind more than the use of Hotchkiss drive as compared with the use of radius rods. There are two hostile camps on this subject. Reading between the words of some makers you cannot but infer their belief that Hotchkiss drive will be the eventual type but that heavy radius rods are good selling arguments at the present time.

One of the advantages advanced by exponents of Hotchkiss drive is the reduced weight it is possible to obtain with this form of construction. On a heavy-duty truck of 5-ton capacity approximately 100 lb. can be cut out of the weight. The Hotchkiss drive admits of easier assembly.

Hotchkiss Decreases Weight

Another argument advanced for it by many of its exponents is that it affords a very desirable flexibility between the truck engine and the rear wheels. Many makers express a strong desire for such a flexibility be it ever so slight, and this form of construction appears to satisfy them.

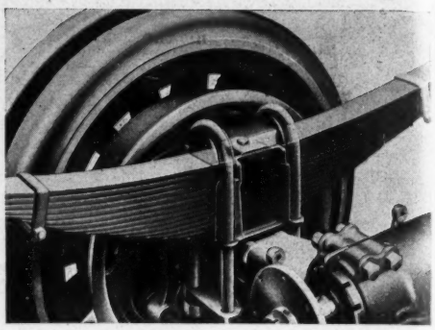
While Hotchkiss drive made its debut with passenger cars it generally is conceded that with heavy motor trucks the problem is handled more easily than with light trucks or passenger cars.

Looking at the other side of the question, those who favor the radius rods advance many arguments in favor of their design. One firm had difficulty with its Hotchkiss drive owing to brakes seizing. This resulted in bearing trouble and radius rods were fitted as a solution. Others point to the rough usage received by a truck and mention how many trucks are backed so severely into loading platforms, etc., that radius rods are a necessity to prevent the rear axle from being pushed under the car.

Many features of design connected with the use of Hotchkiss drive show how different manufacturers have solved its application. On the Nash line the two top spring leaves are made specially heavy. On the majority of trucks using this drive springs are much flatter than some years ago, in fact, the flat spring is one of the tendencies of truck design. On the Diamond-T truck a particularly rigid anchoring of the spring to the axle is used. The spring sits in a special casting, above, which is U-shaped and snugly fits the spring. On top of this casting is a special block which is recessed to take an upward arch in the center of the top spring leaf. On the vertical sides of the U casting are heavy shoulders bearing against the clips and so preventing displacement of the clips. The work of these shoulders in keeping these clips at right angles to the spring leaves and thereby always insuring a specially rigid anchorage of the spring is considered one of the valuable features of this mounting.

Those manufacturers who have not developed any particular feature of mounting give special attention to a very rigid anchorage of the spring to the axle, with the use of a specially flat spring with heavy top leaf. Some makers are having both top leaves particularly heavy.

Much controversy exists in tire equipment, the matter really settling itself into



Spring anchorage on Diamond-T. The spring sits in a special casting, which is U-shaped and has shoulders which bear against the clips to prevent displacement

a three-cornered dispute in which what is known as the large size single solid tires, the dual tires and the large diameter pneumatic tires are entering. This tire question is far from settled, and it is only possible to express here some general ideas as to how the questions are progressing.

The greater demand for speed in trucks up to 2-ton capacity has brought the attention of pneumatic tires very much to the front. Where there are a great many deliveries, speed is an essential, and it can be accomplished only with pneumatics. There are now practically seven tire concerns furnishing large size pneumatics. For trucks up to 2 tons 7-in. sizes are used, and there are some 8-in. sizes on trucks of this capacity. These large size pneumatics have been under development for three years, but it is only recently that many concerns have followed the Goodyear lead in manufacturing this type of tire. Truck manufacturers differ as to cost of operation with pneumatics which use air pressure as high as 150 lb. Naturally, there is going to be a demand for them. With high tire pressure it is necessary to have pumps to furnish these pressures. The Signal Corps of the United States Army is fitting special pumps to take care of these high pressures.

Problem of Spares

Using these large-size pneumatic tires brings up the problem of carrying spares, which is more difficult with trucks than with passenger cars. Some owners are fitting compartments back of the driver's seat in which the spares can be carried.

The use of the large single solid tire is increasing. It was pointed out three years ago that some of the leading tire makers were recommending the use of larger singles as compared with duals. Goodrich was a leader in this movement. Soon after this Firestone brought out its giant size single, and since then the movement of the large single for heavy duty trucks has been gaining headway. Owners advise that with a large single there is a very greatly increased tire life, greater resilience and reduced skidding. On the last question there is some difference of opinion among different owners. It is agreed that the quantity of rubber in the large single is such as to give the added tire life and added resilience.

The use of the Sewell cushion wheel has increased greatly in cities in the Missis-

sippi valley. Although this wheel is much more expensive than the conventional wheel, owners are free to admit that the tire cost over a period of time is reduced. These owners point to the increased resilience of the wheel and the reduced maintenance charges on the trucks because of this.

There is practically no dissent on the subject as to whether a steel wheel is better than a wood wheel or not. Sentiment favors the metal wheel, but the increased cost stands in the way of many owners. The trouble with wood wheels in many sections of the country is that the wood is not seasoned so well as it used to be and that the spokes work lose in the felloes. Several truck manufacturers state that all their trucks shipped to California are fitted with steel wheels. These makers are generally builders of heavy-duty vehicles.

The use of pressed-on solid tires is increasing. It has been on the increase for three or four years and it is only in outlying sections of the country, where the necessary presses to fit on and remove the pressed-on types of tires are not to be found, that the demountable type of solid tire is used. When the Government announced it was to fit demountable tires on the standardized war truck there was much discussion, but fortunately those engineers in charge of the job were able to bring through pressed-on tires as standard equipment. The main advantage of the pressed-on-tire is its weight and more rigid attachment to the wheel. Weight is very considerable. As demountable tires add approximately 600 lb. to the truck weight the demountable is also a more expensive tire, but it has the advantage of quick removal without the use of any special presses, such as are needed with the pressed-on types.

Other Truck Problems

There are many other problems entering into truck design which are being worked with. One of these is the question of steel bodies. For dump bodies steel is practically universal, but for open express and other types wood is the leader due to the greater expense of steel. Steel is practically necessary for dump bodies where bricks, gravel, stone and similar material are carried. The same applies to open bodies when these loads are handled.

The question of electric lights on trucks is perhaps destined to go hand in hand with that of self-starters. When it is necessary to fit a battery with starting capacity on a truck it will be natural to fit electric lights. At present those trucks not so fitted generally are equipped with oil lights. Oil lights have been improved very greatly in the last few years and made sufficiently substantial to care for the vibration.

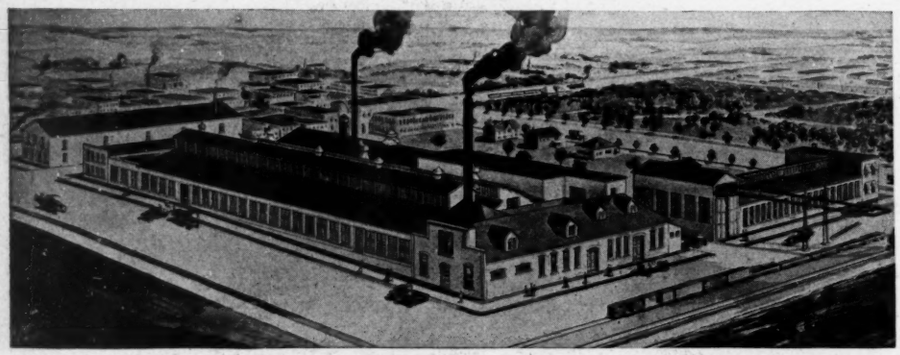
The field of the built-up radiator has increased greatly. By the built-up radiator is meant that type with castings used for the upper and lower water headers and between which is secured the radiator core. A few makers have had difficulty with leaking where the core is attached to the headers, but this generally has been overcome with grinding the faces which are bolted together in assembling the radiator.

Dump bodies with special hoisting arrangements are coming more into service particularly for coal and material hauling. Of the three illustrated on this page, the top shows a 3½-ton Acason truck with Woods hoist and steel dump body. In the center is shown one of the new Harvey tractor-trailer outfits at such a position so as to show its short-turning radius. Note the jacks beneath the trailer which hold up its forward end when disconnected from the tractor. At the bottom is illustrated an Old Reliable truck with dump body, showing a special feature by which the canopy over the driver is dropped or raised as desired

A Prophecy Heeded

Truck Industry Looks Into Future, Sees New Era of Business and Expands

GENERALLY speaking motor truck factories have all increased their factory space during the last year, and almost without exception production schedules for the coming year call for an increase ranging from 25 to 100 per cent over 1917. It goes without saying that motor trucks are coming and will come into their own through the present conservation of everything that has to do with human existence in the months immediately to come more than during any like period in the history of the industry. It would be impossible here to show either in picture or story the wonderful progress made by all truck manufacturers during the last year. As far as space permits there is given on this and the three following pages illustrations from various truck plants and a brief resumé of the producing company whose plant is shown. Increase in production, it will be noted, is general rather than spasmodic. Even the companies that have been in existence but a short time have found it necessary to expand their producing capacities almost as much as some of those who have been in the business so long that they may be looked upon as the fathers of the industry. All this goes to show that the truck industry is at the dawn of a new era of commercialism. There has never been a time when motor trucks were in such demand as right now, and the fact that every company is planning for a much greater production in 1918 presages a wave of prosperity for truck makers such as they have never experienced before. War orders have had much to do with this, but it cannot be other than logical to reason that this business is to be of a sound nature when so many companies of high standing have looked into the future, and all found the same answer—expansion.



This is a birdseye view of the Cadillac Auto Truck Co. plant at Cadillac, Mich. This concern was organized in September, 1915, and production began five months later. In 1917 it made 750 trucks, and production for next year is estimated at 1,200. The factory area is now 80,000 sq. ft., 10,000 sq. ft. of this having been added during the last year. Its product, which is known as the Acme, comes in four models —1, 2, 3½ and 4-ton

Engines used in the Nash trucks are assembled as shown here. In previous years the Nash has been known as Jeffery. The business was begun by the Thomas B. Jeffery Co. in 1900, although the manufacture of trucks did not start until 1912. The truck production the first year was approximately twenty-five. In 1913 it was increased to 300; in 1914, 1500; in 1915, 2500; in 1916, 3000; in 1917, 4000, and the production schedule for 1918 calls for 7500. The factory floor space occupies 31 acres although this covers both the truck and passenger factory. During the last year a complete foundry and a five-story body plant have been added, and the output of this factory will be 25,000 bodies for passenger cars and several thousand bodies for trucks. The Thomas B. Jeffery Co. was purchased by C. W. Nash in August, 1916, and incorporated as the Nash Motors Co.

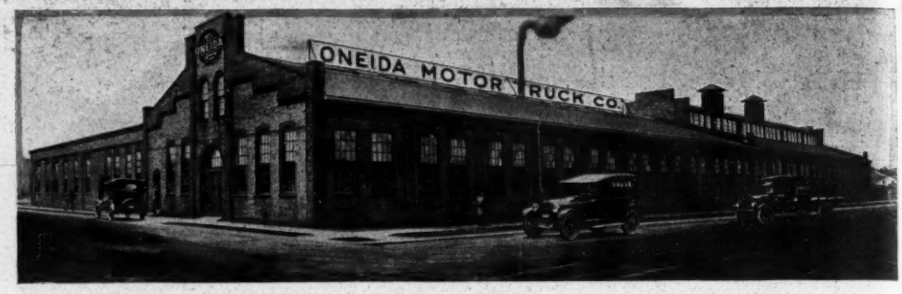
This is the room in which Packard truck chassis are assembled. The Packard Motor Car Co. was organized at Warren, Ohio, in 1899. Later it moved to Detroit and began making trucks in 1905. Since that time nearly $80,000,000 worth of trucks have been sold. The factory consists of sixty-six buildings, having a floor space of 54 acres, 50 acres of which are covered by the plant proper. This, however, is the total of both car and truck factories

This illustration represents the finished assembly room where Dart trucks are brought ready for delivery to the Government. The Dart Motor Truck Co. began producing trucks in 1905, and the yearly production up to and including 1917 has averaged about 300 per year. The estimated production for next year is 2600. The plant occupies a floor space of 56,500 sq. ft., more than half of which represents additions during the last year

At the left is one of the automatic machine rooms in the White truck factory in Cleveland, Ohio. White trucks are made for all purposes and have been used to a considerable extent by the Government, by road contractors and for all general hauling work. There are several types and sizes to meet the varying conditions of hauling between the lightest and heaviest extremes

Inside and Outside the Truck Factories

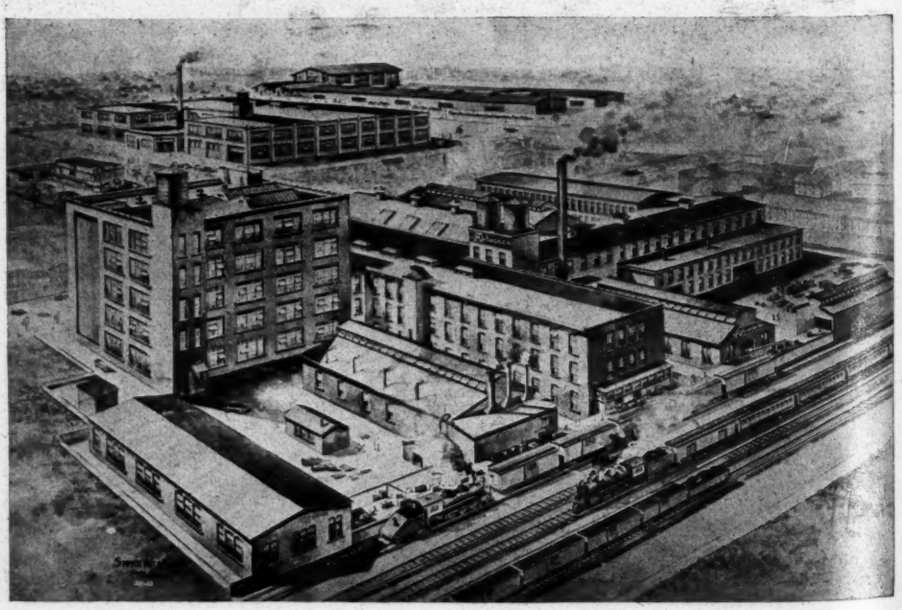
At the right is shown the plant of the Oneida Motor Truck Co., Green Bay, Wis., a concern organized during the last year and producing four models of worm-driven trucks, the capacities being 1-ton, 1½-ton, 2-ton and 3½-ton. Being one of the new ones, it is difficult to give production figures at present time

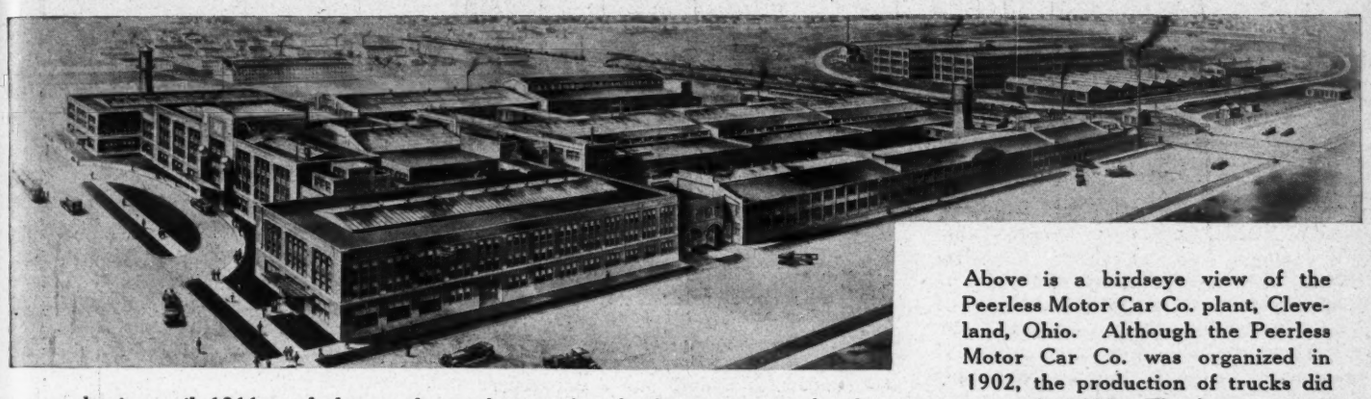


At the left is the truck factory of the Selden Motor Vehicle Co., Rochester, N. Y., which was organized in 1905 and began the manufacture of trucks that year. Present production runs into the thousands per year. This year's figures are expected to reach 5000

At the left is an interior view of the Selden truck plant where truck chassis of seven capacities are assembled. These chassis are rated at ¾, 1, 2, 3½ and 5 tons, there being two types of the first and second capacities given. Originally the company only built passenger cars, but seven years ago it began producing trucks and now occupies the floor space of 85,000 sq. ft., 20,000 sq. ft. of which were added in the last year

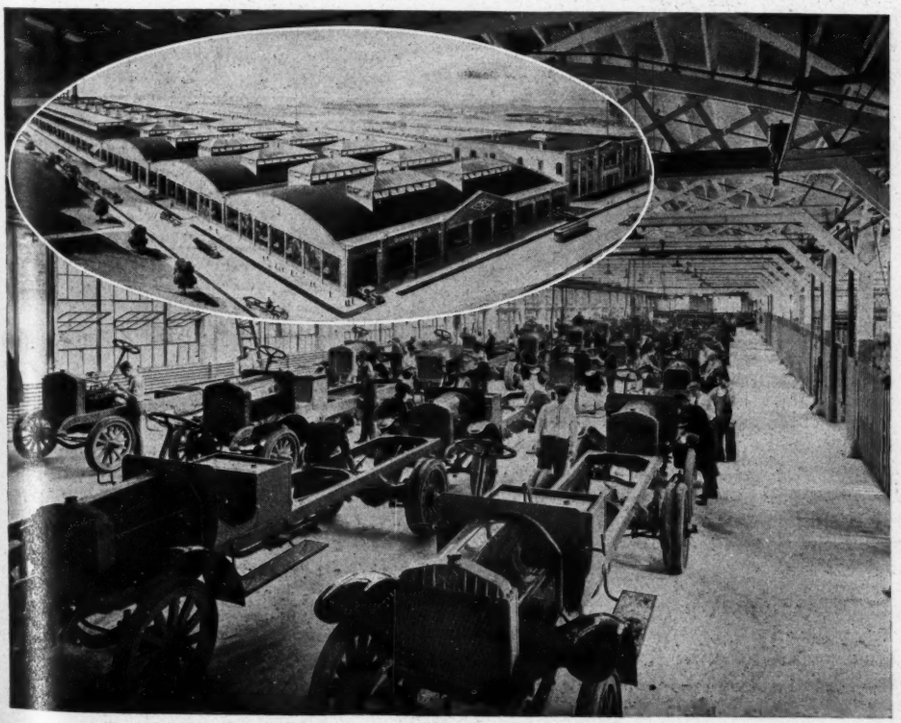
At the right is a birdseye view of the Autocar Co.'s plant at Ardmore, Pa. This company was organized in 1897 and began producing trucks in 1901. The company abandoned the production of passenger cars in 1912 and since that time has devoted its entire time to trucks. Three factory additions have been added during the last two years, and a fourth is now under way





Above is a birdseye view of the Peerless Motor Car Co. plant, Cleveland, Ohio. Although the Peerless Motor Car Co. was organized in 1902, the production of trucks did not begin until 1911, and the yearly production for the last two years has been approximately 3500. The factory space at present is 600,000 sq. ft. Factory additions during the last year have cost approximately $800,000

At the right is a view of the assembly room of the Bethlehem Motors Corp., Allentown, Pa., a new company organized late in December last year. Truck production began last April. During the period from April 1 to Oct. 1, 1250 trucks were built, and production plans for 1918 call for 5000. The factory area is 125,000 sq. ft. Since production began there have been some minor additions to the plant



At the left the larger view is the Diamond T Motor Car Co. truck plant in Chicago, and the insert shows an exterior view of the plant. This company began business in 1905, producing passenger cars only. In 1911 the truck line was added, and a year later passenger car production was abandoned. Up to the fall of 1915 production was limited practically to local consumption in and around Chicago, the average output being around 150. Two years ago the company was reorganized, and began expanding, production being increased to 500 trucks in 1916, and this year 1500 will be built. For next year plans call for 3500 trucks. The company took a new factory last summer which covers 10 acres of ground

How Much Gasoline Do You Waste?

How You Can Help Save 561,000,000 Gal. a Year for Needs of Army, Navy and Industries

NEW YORK, Oct. 26—It is agreed that an ample supply of crude oil exists for all the needs of the Army and Navy to operate motor vehicles and motor boats and for the industries, provided waste is avoided. Therefore, it is up to the motorists of the country to decide whether that supply shall prove ample in the long run or not. Many of the motorists have enrolled in such a campaign against waste and are working in co-operation with the petroleum division of the Bureau of Mines and the Council of National Defense. "Don't Waste" has been adopted as the slogan, and the suggestions reprinted on these pages have been taken as a guide.

The Bureau of Mines estimates that 1,500,000 gal. can be saved daily, basing its estimate on the following: Tank wagon losses, 7200 gal.; leaky carbureters, average 1/17 pt. a car, 30,400 gal.; poorly-adjusted carbureters, ½ pt. a car, 240,000; engines running idle, ¼ pt. a car, 150,000; wasted in garages, 10 pt. a day, 67,000; saved by using kerosene in garages, 108,000; needless use of passenger cars, 1¾ pt. a car, 897,000 gal.

The petroleum division estimates that 959,000 gal. of gasoline a day will be required for the Army, Navy and aeronautical operations during the war. The total daily production is 6,849,000 gal., and the saving of 1,500,000 gal. a day, or 561,000,000 gal. a year, the estimated requirements for the war, 350,000,000 gal. a year, could be spared and the motorist continue to use gasoline also.

Airplanes Need Best

Airplanes require the very highest grade of gasoline. Great quantities also will be required to operate the thousands of Army motor trucks which will be used. Approximately, 4,212,000 motor vehicles, of which approximately 400,000 are motor trucks, are running in this country. Of the 6,849,000 gal. of gasoline produced daily, approximately 4,800,000 gal. are used by motor cars and trucks, while the rest is used by motor boats, stationary engines and in cleansing and other industries.

The National Automobile Chamber of Commerce is co-operating with the Bureau of Mines and Council of National Defense to stop gasoline waste. Thousands of posters will be hung in salesrooms, garages and supply stations throughout the country, on which will be shown the quantity of gasoline produced daily, the quantities used by motor cars and trucks and the quantities that can be saved in various ways. With the N. A. C. C. are co-operating the A. A. A., the Motor & Accessory Manufacturers and the Society of Automotive Engineers. The waste of gasoline will have to be stopped if the Army and Navy are to get their full share of the fuel without taking it away from motorists in general. That the Army and Navy can get their full share without doing this is what the estimates as to possible savings tend to show. Read the suggestions on these pages closely, and after you have read try to follow them.

Save the Gasoline

1—Store gasoline in underground steel tanks. Use wheeled steel tanks with measuring pump and hose. They prevent loss by fire, evaporation and spilling.

2—Don't spill or expose gasoline to air—it evaporates rapidly and is dangerous.

3—Don't use gasoline for cleaning and washing—use kerosene or other materials to cut grease.

4—Stop all gasoline leakages. Form habit of shutting off gas at tank or feed pipe.

5—Adjust brake bands so they do not drag. See that all bearings run freely.

6—Don't let engine run when car is standing. It is good for starter battery to be used frequently.

7—Have carbureters adjusted at service stations of carbureter or motor car companies—they will make ordinary adjustments without charge.

8—Keep needle valve clean and adjust carbureter (while engine is hot) to use as lean mixture as possible. A rich mixture fouls the engine and is wasteful.

9—Pre-heat air entering carbureter and keep radiator covered in cold weather—this will insure better vaporization.

10—See that spark is timed correctly with engine and drive with spark fully advanced—a late spark increases gas consumption.

11—Have a hot spark, keep plugs clean and spark points properly adjusted.

12—Avoid high speed. The average car is most economical at 15 to 25 m.p.h.

13—Don't accelerate and stop quickly—it wastes gas and wears out tires. Stop engine and coast long hills.

14—Cut down aimless and needless use of cars. Do a number of errands in one trip.

15—Know your mileage per gallon. Fill tank full and divide odometer mileage by gallons consumed.

ESSEX LEASES PLANT

Detroit, Oct. 26—The Essex Motor Co., recently incorporated by officials and stockholders of the Hudson Motor Car Co. to make a light car, has taken a three-year lease on the old No. 5 Studebaker plant. This building is approximately 200 by 200 ft., has three stories and about 60,000 sq. ft. of floor space. It is expected that the plans and specifications of the new Essex car will be announced in a few weeks. Already Hudson dealers throughout the country are making applications for agencies and contracts.

TRUCKS TOUR WITH CARS

Kansas City, Mo., Oct. 26—Four trucks accompanied the thirty-two passenger cars that took the Kansas City Motor Car Dealers' Association on its annual trade trip through the oil districts of Kansas this year. The trucks were a G. M. C. ¾-tonner on pneumatics, which carried the baggage; a Kelly on solid tires, carrying 1000 lb. of sand ballast; a Nash 1-ton truck and a Republic. All the trucks kept up, even at the fast pace of 40 m.p.h. set some days, falling a trifle behind in the mud Saturday morning but making up for lost time that afternoon.

The trip started Monday of last week from Kansas City, extended southward through Iola and Independence to Arkansas City and Wellington, north through Wichita, Augusta and Eldorado to Emporia and back to Kansas City, 702 miles. The performance of the trucks on the country roads attracted the major interest of the town and farm business men and an unusual amount of interest from local motor car dealers also. There were no accidents and little engine trouble. One truck's engine ran continuously—except one noon when a kind-hearted friend of the driver presumed he had left it running carelessly and shut it off. The driver, however, heard it keeping still and rushed out to start it again.

PERMANENT RECEIVER FOR ROSS

Detroit, Oct. 26—B. F. Everitt has been appointed permanent receiver of the Ross Automobile Co. It is expected that the creditors will realize fully, though no further plans are at present available. H. F. Howland of the engineering department has resigned.

HAL AND ABBOTT MAY MERGE

Cleveland, Ohio, Oct. 26—A plan has been proposed for the merging of the Abbott Corp. and the Hal Motor Car Co., both of Cleveland. The directors will meet soon to decide if the proposition shall go through. If the combination is effcted, the company will continue to make the HAL Twelve and the Abbott Six passenger cars and also will produce a truck. The combined capitalization of the two companies is now something over $1,000,000. Abbott moved here from Detroit and last March began producing cars in its plant here. F. B. Willis is president of the HAL company; Frank H. Ginn, secretary, and E. G. Tillotson, treasurer. Alfred Thompson is president of Abbott.

STUDEBAKER EARNINGS $5,000,000

South Bend, Ind., Oct. 26—At the next monthly meeting of the board of directors of the Studebaker Corp. action will be taken on the quarterly dividends, and it is expected that the present regular 4 per cent rate will be maintained. It is stated that the Studebaker Corp. in the year to Dec. 31 will earn for its stockholders between $5,000,000 and $6,000,000, equal to between 14 and 17 per cent on the $30,000,000 common stock, after allowing for preferred dividends. This compares with $8,611,245 in 1916.

A Directory of Motor Truck Makers

210 Manufacturers of Commercial Vehicles for 1918—188 Gasoline—Two Steam and Nine Electric—Models Made in Tons Capacity

Name	Manufacturer	Address	MODELS IN TONS CAPACITY (Figures refer to capacity, not number of models)														
			Under ½	½	¾	1	1½	2	2½	3	3½	4	5	5½	6	6½	7 and over
Gasoline Vehicles																	
A. & B.	American & British Mfg. Co.	Providence, R. I.					1½	2		3	3½		5				T
Acason	Acason Motor Truck Co.	Detroit, Mich.				1		2			3½		5				
Acme	Cadillac Auto Truck Co.	Cadillac, Mich.															
Allis-Chalmers	Allis-Chalmers Mfg. Co.	Milwaukee, Wis.						2			3½		5				
American	American Motor Truck Co.	Detroit, Mich.									3½						
Armleder	O. Armleder	Cincinnati, Ohio						2			3½						
Atlas	Martin Truck & Body Corp.	York, Pa.			¾												
Atterbury	Atterbury Motor Car Co.	Buffalo, N. Y.					1½	2			3½						
Autocar	Autocar Co.	Ardmore, Pa.						2									
Available	Available Truck Co.	Chicago, Ill.				1		2			3½		5				
Avery	Avery Co.	Peoria, Ill.				1		2		3			5				
Barber	Barber Motors Corp.	Brooklyn, N. Y.															T
Barker	C. L. Barker	Norwalk, Conn.				1		2									
Bauer	Bauer Machine Wks Co.	Kansas City, Mo.		½	¾												
Beck	Beck Motor Truck Works	Cedar Rapids, Iowa				1	1½	2									
Beech Creek	Beech Creek Truck & Auto Co.	Beech Creek, Pa.								3							
Bell	Bell Motor Car Co.	York, Pa.		⅜													
Bessemer	Bessemer Motor Truck Co.	Grove City, Pa.				1		2			3½						
Bethlehem	Bethlehem Motors Corp.	Allentown, Pa.					1½		2½								
Blair	Blair Motor Truck Co.	Newark, Ohio						2		3			5				
Bourne	Bourne Magnetic Truck Co.	Phiadelphia, Pa.						2			3½						
Brinton	Brinton Motor Truck Co.	Philadelphia, Pa.				1			2½								
Briscoe	Briscoe Motor Co.	Jackson, Mich.		½		1											
Brockway	Brockway Motor Truck Co.	Cortland, N. Y.					1½	2			3½						
Buick	Buick Motor Co.	Flint, Mich.			¾												
Burford	Taylor Motor Truck Co.	Fremont, Ohio						2			3½						
Chase	Chase Motor Truck Co.	Syracuse, N. Y.				1	1½		2½	3	3½						
Clydesdale	Clyde Cars Co.	Clyde, Ohio			¾		1½	2			3½		5				
Collier	Collier Motor Truck Co.	Sandusky, Ohio			¾												
Columbia	Columbia Motor Truck & Trailer Co.	Pontiac, Mich.				1		2									
Commerce	Commerce Motor Car Co.	Detroit, Mich.			¾	1											
Concord	Abbott-Downing Co.	Concord, N. H.				1		2									
Continenial	Continental Motor Truck Co.	Chicago, Ill.				1	1½	2			3½						
Corbitt	Corbitt Motor Truck Co.	Henderson, N. C.				1	1½	2	2½		3½		5				
Corliss	Corliss Motor Truck Co.	Corliss, Wis.															
Couple-Gear	Couple-Gear Freight Wheel Co.	Grand Rapids, Mich.		½							3½		5				
Croce	Croce Automobile Co.	Asbury Park, N. J.		½													
Dain	Dain Mfg. Co.	Ottumwa, Iowa				1											
Dart	Dart Motor Truck Co.	Waterloo, Iowa				1		2			3½						
Dayton	Durable Dayton Truck Co.	Dayton, Ohio						2			3½		5				7½
D-E	Day-Elder Motors Co.	Newark, N. J.			¾	1	1½		2½								
DeKalb	DeKalb Wagon Wks. Co.	DeKalb, Ill.						2	2½								
Denby	Denby Motor Truck Co.	Detroit, Mich.				1	1½	2	2½								
Denmo	Grant Motor Car Corp.	Cleveland, Ohio		½			1½										
Diamond-T	Diamond-T Motor Car Co.	Chicago, Ill.				1	1½	2			3½		5				
Dispatch	Dispatch Motor Car Co.	Minneapolis, Minn.			¾												
Doane	Doane Motor Truck Co.	San Francisco, Cal.							2½						6		
Dorris	Dorris Motor Car Co.	St. Louis, Mo.			¾			2									
Duplex	Duplex Truck Co.	Lansing, Mich.						2		3							
Durable	Durable Motor Truck Co.	Hammond, Ind.															
Ellsworth	Mills-Ellsworth Co.	Keokuk, Iowa		½													
Fageol	Fageol Motors Co.	Oakland, Cal.						2									
Fargo	Fargo Motor Car Co.	Chicago, Ill.						2									
Federal	Federal Motor Truck Co.	Detroit, Mich.				1	1½	2			3½		5				
Forschler	Forschler Wagon Co.	New Orleans, La.			¾	1	1½	2									
Ford	Ford Motor Co.	Detroit, Mich.				1											
F. W. D.	Four Wheel Drive Auto Co.	Clintonville, Wis.								3							
Fulton	Fulton Motor Truck Co.	Farmingdale, L. I.					1½										
Gabriel	Gabriel Auto Co.	Cleveland, Ohio				1		2			3½						
Garford	Garford Motor Truck Co.	Lima, Ohio				1	1½	2			3½		5		6		
Gary	Gary Motor Truck Co.	Gary, Ind.				1	1½	2	2½		3½						
G. A. Schacht	G. A. Schacht Motor Truck Co.	Cincinnati, Ohio						2	2½		3½		5				
Gem	Gem Motor Car Corp.	Grand Rapids, Mich.		½													
Geneva	Geneva Wagon Co.	Geneva, N. Y.			¾												
Gersix	Gerlinger Motor Car Co.	Portland, Ore.						2½									
Globe	Globe Motor Truck Co.	E. St. Louis, Ill.				1											
G. M. C.	General Motors Truck Co.	Pontiac, Mich.			¾	1	1½	2			3½		5				
Gramm-Bernstein	Gramm-Bernstein Co.	Lima, Ohio				1	1½	2	2½		3½		5				
G. V.-Mercedes	General Vehicle Co.	Long Island City, N. Y.													6		
Hahn	Hahn Motor Truck Co.	Hamburg, Pa.				1		2									
Hall	Lewis-Hall Iron Wks.	Detroit, Mich.						2			3½		5				
Harrison	Robert Harrison Co.	South Boston, Mass.									3½						
Harvey	Harvey Motor Truck Co.	Harvey, Ill.							2½		3½		5				7
Hawkeye	Hawkeye Mfg. & Repair Co.	Sioux City, Iowa					1½										
Hendrickson	Hendrickson Motor Truck Co.	Chicago, Ill.						2			3½						

Heavy type represents vehicles whose specifications are given in this issue.

A Directory of 210 Manufacturers of Gasoline, Steam, Elec

Name	Manufacturer	Address	MODELS IN TONS CAPACITY *Figures refer to capacity, not number of models*													
			Under ½	½	¾	1	1½	2	2½	3	3½	4	5	5½	6	6½	7 and over
Hewitt-Ludlow	Hewitt-Ludlow Auto Co	San Francisco, Cal															
Highway	Highway Tractor Co	Indianapolis, Ind									3½						
Higrade	Higrade Motors Co	Grand Rapids, Mich			¾	1											
Hoover	Hoover Wagon Co	York, Pa			¾												
Horner	Detroit-Wyandotte Motor Co	Wyandotte, Mich					1½	2		3			5				
Hurlburt	Hurlburt Motor Truck Co	New York City					1½	2			3½		5				7
I. H. C	International Harvester Corp	Akron, Ohio			¾	1		2									
Independent	Independent Motors Corp	Port Huron, Mich				1		2									
Indiana	Indiana Truck Co	Marion, Ind				1		2			3½		5				
Kearns	Kearns Motor Car Co	Beavertown, Pa		½													
Kelly-Springfield	Kelly-Springfield Motor Truck Co	Springfield, Ohio					1½		2½		3½	4	5		6		
Kimball	Kimball Motor Truck Co	Los Angeles, Cal															
King	A. R. King Mfg. Co	Kingston, N. Y									3½						
Kissel	Kissel Motor Car Co	Hartford, Wis			¾	1¼		2			3½						
Kleiber	Kleiber Co., Inc	San Francisco, Cal				1	1½	2	2½		3½		5				
Knox	Knox Motors Co	Springfield, Mass								3							T
Koehler	H. J. Koehler Motors Corp	Newark, N. J					1¼			3							
Lambert	Buckeye Mfg. Co	Anderson, Ind				1											
Landshaft	William Landshaft & Son	Chicago, Ill				1		2									
Lane	Lane Motor Truck Co	Kalamazoo, Mich					1½		2½		3½						
Lange	Lange Motor Truck Co	Pittsburgh, Pa					1½		2½								
Lapeer	Lapeer Tractor-Truck Co	Lapeer, Mich								3			5				
Larrabee	Larrabee-Deyo Motor Truck Co	Binghamton, N. Y				1	1½		2½		3½						
Lawson	Lawson Mfg. Co	Pittsburg, Pa		½													
Lenox	Lenox Motor Car Co	Boston, Mass															
Lippard-Stewart	Lippard-Stewart Motor Car Co	Buffalo, N. Y		½	¾	1	1½	2									
Little Giant	Chicago Pneumatic Tool Co	Chicago, Ill			¾	1	1½	2									
Lombard	Lombard Auto-Tractor-Truck Corp	New York City											5				
Lumb	Lumb Motor Truck & Tractor Co	Aurora, Ill							2¼								
Maccar	Maccar Co	Scranton, Pa					1½		2½		3½			5½			
Mack	International Motor Co	New York City				1	1½	2			3½		5	5½		7	7&T
Manly	Manly Motor Corp	Chicago, Ill					1½	2	2½								
Master	Master Trucks, Inc	Chicago, Ill						2									
Maxfer	Maxfer Truck & Tractor Co	Chicago, Ill															
Maxwell	Maxwell Motor Co	Detroit, Mich				1											
Menominee	Menominee Motor Truck Co	Menominee, Mich			¾	1	1½	2			3½						
Mercury-Bulley	Mercury Mfg. Co	Chicago, Ill															T
Modern	Bowling Green Motor Car Co	Bowling Green, Ohio					1½										
Moreland	Moreland Motor Truck Co	Los Angeles, Cal				1	1½		2½			4	5				
Muskegon	Muskegon Engine Co	Muskegon, Mich						2									
Nash	Nash Motors Co	Kenosha, Wis				1		2									
Nelson & LeMoon	Nelson & LeMoon	Chicago, Ill					1½	2		3			5				
Netco	New England Truck Co	Fitchburg, Mass						2									
New York	Tegetmeier & Reipe	New York City					1½	2									
Niles	Niles Car & Mfg. Co	Niles, Ohio				1		2									
Noble	Noble Motor Truck Co	Kendallsville, Ind						2									
OK	Oklahoma Auto Mfg. Co	Muskogee, Okla															
Old Hickory	Kentucky Wagon Mfg. Co	Louisville, Ky			¾												
Old Reliable	Old Reliable Motor Truck Co	Chicago, Ill					1½	2	2½	3		4	5				7
Oneida	Oneida Motor Truck Co	Green Bay, Wis				1	1½	2			3½						
Overland	Willys-Overland Co	Toledo, Ohio		⅜													
Packard	Packard Motor Car Co	Detroit, Mich				1		2	2½			4	5		6		7
Packet	Packet Motor Truck Co	Minneapolis, Minn	¼														
Palmer	Palmer-Meyer Motor Car Co	St. Louis, Mo				1		2									
Peerless	Peerless Motor Car Co	Cleveland, Ohio						2		3		4	5		6		
Phoenix Centiped	Phoenix Mfg. Co	Eau Claire, Wis											5				
Pierce-Arrow	Pierce-Arrow Motor Car Co	Buffalo, N. Y						2					5				
Pull-More	Pull-More Motor Truck Co	Pittsburgh, Pa								3							
Rainier	Rainier Motor Corp	New York City		½													
Reo	Reo Motor Car Co	Lansing, Mich			¾			2									
Rennoc-Leslie	Rennoc-Leslie Motor Co	Philadelphia, Pa								3							
Republic	Republic Motor Truck Co	Alma, Mich			¾	1	1½	2			3½		5				
Reya	Reya Co	Napoleon, Ohio				1											
Riker	Locomobile Co	Bridgeport, Conn								3		4					
Robinson	Golden West Motors Co	Sacramento, Cal						2									
Royal	Royal Motor Truck Co	New York City				1			2½		3½		5		6		7
Rowe	Rowe Motor Truck Co	Downington, Pa				1		2		3			5				
Rush	Rush Motor Truck Co	Philadelphia, Pa		½													
Sandow	Sandow Motor Truck Co	Chicago, Ill				1		2									
Sanford	Sanford Motor Truck Co	Syracuse, N. Y					1½		2½		3½						
Schleicher	SchleicherMotor Vehicle Co	New York City								3			5				
Selden	Selden Motor Vehicle Co	Rochester, N. Y			¾	1		2	2½		3½		5				
Seneca	Seneca Motor Truck Co	Fostoria, Ohio															
Service	Service Motor Truck Co	Wabash, Ind				1	1½	2			3½		5				
Signal	Signal Motor Truck Co	Detroit, Mich					1¼	2	2½			4	5				
Standard	Standard Motor Truck Co	Detroit, Mich						2			3½		5				
Steele	W. M. Steele	Worcester, Mass						2		3		4	5				
Stegeman	Stegeman Motor Car Co	Milwaukee, Wis						2		3		4	5				7
Sterling	Sterling Motor Truck Co	Milwaukee, Wis							2½		3½		5				7
Stewart	Stewart Motor Corp	Buffalo, N. Y			¾		1½	2									
Studebaker	Studebaker Corp	South Bend, Ind		½		1											
Sullivan	Sullivan Motor Car Co	Rochester, N. Y					1½	2									
Superior	Superior Motor Truck Co	Atlanta, Ga				1		2									
Taylor	Taylor Motor Truck Co	Fremont, Ohio				1	1½		2½		3½		5				
Thomas	Consolidated Motors Corp	Schenectady, N. Y						2			3½						
Tiffin	Tiffin Wagon Co	Tiffin, Ohio			¾	1	1½		2½		3½		5		6		
Titan	Millman Motor Truck Co	Milwaukee, Wis											5				
Topp-Stewart	Topp-Stewart Tractor Co	Waukesha, Wis															
Tower	Tower Motor Truck Co	Greenville, Mich						2									
Transport	Transport Tractor Co	Long Island City, N. Y											5				
Triangle	Triangle Motor Truck Co	St. Johns, Mich					1½										
Turnbull	Turnbull Motor Truck & Wagon Co	Defiance, Ohio															

Heavy type represents vehicles whose specifications are given in this issue.

Electric and Electric Industrial Vehicles for 1918—Concluded

Name	Manufacturer	Address	MODELS IN TONS CAPACITY *Figures refer to capacity, not number of models*														
			Under ½	½	¾	1	1½	2	2½	3	3½	4	5	5½	6	6½	7 and over
Union	Union Motor Truck Co	Bay City, Mich							2½								
United	United Motors Co	Grand Rapids, Mich						2			3½	4	5				
United Four-Wheel Drive	United Four-Wheel Drive Co	Chicago, Ill								3							
Universal	Universal Service Co	Detroit, Mich					1½	2		3							
U. S	United States Motor Truck Co	Cincinnati, Ohio						2			3½		5				
Van Winkle	Van Winkle Motor Truck Co	Atlanta, Ga															
Velie	Velie Motors Corp	Moline, Ill									3½						
Vim	Vim Motor Truck Co	Philadelphia, Pa		½				2									
Voltz	Voltz Bros	Chicago, Ill								3			5				
Walter	Walter Motor Truck Co	New York City											5				
Watson	Watson Wagon Co	Canastota, N. Y											T				
Ware	Twin City Four Wheel Drive Co	St. Paul, Minn									3½						
Western	Western Truck Mfg. Co	Chicago, Ill															7
White	White Co	Cleveland, Ohio			¾		1½			3			5				
White Hickory	White Hickory Wagon Mfg. Co	Atlanta, Ga					1½										
Wichita	Wichita Falls Motor Co	Wichita Falls, Tex				1	1½	2	2½		3½		5				
Wilcox	H. E. Wilcox Motor Co	Minneapolis, Minn				1	1½	2			3½		5				
Wilson	J. C. Wilson Co	Detroit, Mich						2			3½						
Winther	Winther Motor Truck Co	Winthrop Harbor, Ill						2		3		4	5		6		
Wisconsin	Myers Machine Co	Sheboygan, Wis					1½		2½								
Witt-Will	Witt-Will Co	Washington, D. C				1			2½								
W-S	Weier-Smith Truck Co	Birmingham, Mich							2½								

Steam Vehicles

Doble	Doble Laboratories	San Francisco, Cal				1											
Steamotor	Steamotor Truck Co	Chicago, Ill						2									

Electric Vehicles

Atlantic	Atlantic Vehicle Co	Newark, N. J															
C.T	Commercial Truck Co	Philadelphia, Pa		½		1		2			3½		5				
Couple-Gear	Couple-Gear Freight Wheel Co	Grand Rapids, Mich											5				7
G.V	General Vehicle Co	Long Island City, L. I		½		1		2			3½		5				
Lansden	Lansden Co	Brooklyn, N. Y						2			3½		5		6		
Lansing	Lansing Co., Inc	Lansing, Mich							2½						6		
Urban	Kentucky Wagon Mfg. Co	Louisville, Ky															
Walker	Walker Vehicle Co	Chicago, Ill		½		1		2		3		4	5				T
Ward	Ward Motor Vehicle Co	Mt. Vernon, N. Y	⅜	½		1		2			3½		5				

Electric Industrial Trucks

Automatic	Automatic Transportation Co	Buffalo, N. Y						2									
Buda	Buda Co	Chicago, Ill															
Electromobile	Orenstein-Arthur Koppel Co	Koppel, Pa				1½	1½	2									T
Elwell-Parker	Elwell-Parker Electric Co	Cleveland, Ohio															
G.V	General Vehicle Co	Long Island City, N. Y															
Hoagland-Thayer	Hoagland-Thayer, Inc	Newark, N. J															
Hunt	C. W. Hunt Co	West New Brighton, N. Y															
Lansden	Lansden Co., Inc	Brooklyn, N. Y															
Lansing	Lansing Co., Inc	Lansing, Mich						2	2½				5				
Mercury	Mercury Mfg. Co	Chicago, Ill															
Transmobile	Cowan Electric Co	Holyoke, Mass						2									

Heavy type represents vehicles whose specifications are given in this issue.

Buyers' Guide to 1918 Gasoline Trucks

Classified According to Load Capacity and Combined with Salient Features of Chassis

TRUCKS OF UNDER ½-TON CAPACITY

Name and Model	Chassis Price	Wheel-base, Inches	Tires	N.A.C.C. Horse-power	Elec-tric System	Gear-set Type	Final Drive
Briscoe.....24	$725	104	pneu....	16.92	s&l-2....	selec..	bevel.....
Buick.....	790	106	pneu....	18.21	s&l.....	selec..	bevel
Overland.....	635	104	pneu....	18.21	s,l&i-2...	selec..	bevel.....
Packet.....	300	100	pneu....	12.08	none....	fric...	dbl chn

TRUCKS OF ½-TON CAPACITY

Atlas.....18	$885*	106	pneu....	16.92	s,l&i-2...	selec..	sp-bev
Corliss.....A	800*	100	pneu....	15.64	.....	selec..	bevel
Croce.....17	825	108	p&s.....	16.92	.....	selec..	bevel
Ellsworth.....25-A	695	108	pneu....	16.92	s,l&i-2...	prog..	bevel
Gem.....	675	.....	pneu....	22.50	s&l.....	selec..	bevel
Kearns.....D	....	107	pneu....	16.92	s,l&i-2...	selec..	bevel
Lawson.....35	.....	112	pneu....	22.50	s&l.....	selec..	bevel
Lippard-Stewart.....MW	1,025	106	pneu....	16.92	s&l-2....	selec..	top worm
Overland.....83B	800	106	pneu....	27.20	s,l&i-2...	selec..	sp-bev
Rainier.....R-1	895	115	pneu....	16.92	s&l-2....	selec..	top worm
Rush.....D	895	105	pneu....	16.92	s&l.....	selec..	bevel
Studebaker.....	945	112	pneu....	24.22	s,l&i-2...	selec..	bevel
Vim.....21	765	108	pneu....	14.40	lighting..	selec.	bevel

TRUCKS OF ¾-TON CAPACITY

Clydesdale.....25	$1,025	124	pneu....	19.61	.....	selec..	bevel
Collier.....M	900	118	pneu....	16.92	.....	selec..	bevel
D-E.....J	975	108	pneu....	15.64	s&l.....	selec..	top worm
Denmo.....12	960	115	pneu....	16.92	s&l.....	selec..	int-gear
Dispatch.....	1,100	120	pneu....	22.50	s,l&i....	fric...	dbl chn
Forschler.....S	1,100	120	solid....	15.64	s,l&i....	selec..	top worm
Geneva.....	.....	96	solid....	22.18	.....	plan..	dbl chn
G.M.C.....16	1,395	132	pneu....	22.50	opt.....	selec..	bevel
Hahn.....	1,100	120*	solid....	19.61	.....	selec..	top worm
Higrade.....A-17	.....	115	pneu....	16.92	s&l-2....	ind-c..	top worm
Hoover.....15-B	1,375	120	pneu....	19.61	none....	selec..	top worm
I.H.C.....H	1,450	115	solid....	19.61	s&l.....	selec..	int-gear
Kisselkar.....	1,185	135	pneu....	24.22	s&l-2*...	selec..	sp-bev
Lippard-Stewart.....W	1,750	125	opt.....	22.50	s&l*....	selec..	top worm
Little Giant.....15	1,500	138	p&s.....	19.61	.....	selec..	top worm
Menominee.....EW	1,425	124	cush....	22.50	.....	selec..	top worm
Modern.....30	1,800	132	solid....	22.50	none....	selec..	top worm
Old Hickory.....M	875	112	pneu....	16.92	s,l&i....	selec..	Sp-bev
Reo.....F	1,050	128	pneu....	27.20	s,l&i-2...	selec..	sp-bev
Republic.....Dsptch	895	110	p&s*....	16.92	starting..	selec..	int-gear
Republic.....Spec.	895	128	p&s*....	16.92	.....	selec..	int-gear

TRUCKS OF ¾-TON CAPACITY (Cont'd)

Name and Model	Chassis Price	Wheel-base, Inches	Tires	N.A.C.C. Horse-power	Elec-tric System	Gear-set Type	Final Drive
Selden.....G	$1,075	110	pneu....	15.64	s&l-2*...	selec..	top worm
Stewart.....6	845	110	pneu....	15.64	.....	selec..	int-gear
Tiffin.....A	1,190	110	pneu....	19.61	none....	selec..	int-gear
White.....GBBE	2,300	133½	pneu....	22.50	s&l*....	selec..	bevel
Wilcox.....V	1,300	120	pneu....	19.61	none....	selec..	worm

TRUCKS OF 1-TON CAPACITY

Acme.....B	$1,750	130	solid....	22.50	s,l&i-2...	ind-c..	top worm
Available.....1	1,775	132	solid....	22.50	none....	selec..	top worm
Beck.....A	1,080	124	solid....	19.61	ltg-2*...	selec..	int-gear
Bessemer.....G	1,250	124	solid....	19.61	none....	selec..	int-gear
Bethlehem.....A-1	1,245	126	solid*...	22.50	none....	selec..	int-gear
Brinton.....H	1,250	125	pneu*...	16.92	lighting..	selec..	top worm
Briscoe.....T-24	1,000	132	p&s.....	16.92	s&l-2....	selec..	dbl chn
Chase.....A	1,725	138	optional.	19.61	optional.	selec..	top worm
Commerce.....E	1,340	126	solid....	19.61	s,l&i-2...	selec..	int-gear
Concord.....B	1,750	130	p&s*....	19.61	s&l*....	selec..	top worm..
Continental.....FL	1,750	144	solid....	22.50	.....	selec..	top worm
Corbitt.....E	1,650	130	optional.	22.50	s,l&i-2*..	selec..	top worm
Dart.....E	1,800	130	solid....	22.50	s&l-2*...	selec..	top worm
D-E.....A	1,495	128	solid....	19.61	none....	selec..	top worm
Denby.....12	1,490	124	solid....	19.61	s&l.....	selec..	int-gear
Denmo.....10	1,490	124	solid*...	22.50	s&l.....	selec..	int-gear
Diamond-T.....J5	1,725	132	solid....	19.61	none....	selec..	top worm
Federal.....S	1,750	132	solid....	19.61	s&l-2*...	selec..	top worm
Ford.....	600	123	p&s.....	22.50	lighting..	plan..	top worm
Forschler.....A-0	1,815	138	solid....	19.61	.....	selec..	top worm
Gabriel.....C	1,800	136	pneu....	29.00	s&l-2*...	selec..	top worm
Garford.....75B	1,750	128	p&s.....	19.61	s,l&i-2*..	selec..	top worm
Gary.....F	....	130	solid....	22.50	lighting*	selec..	top worm
Globe.....A-1	1,375	132	solid....	19.61	none....	selec..	int-gear
G.M.C.....21	1,950	136	p&s*....	22.50	opt.....	selec..	top worm
Gramm-Bernstein.....W	1,900	124	solid....	22.50	none....	ind-c..	top worm
Hoover.....15-B	1,375	120	pneu....	19.61	.....	selec..	top worm
Independent.....F	1,385	128*	solid....	19.61	s&l.....	selec..	top worm
Indiana.....T	1,600	135	solid....	19.61	lightg*..	selec..	top worm
I.H.C.....F	1,750*	128*	solid*...	19.61	s&l*....	selec..	int-gear
Kisselkar.....	1,585	152	solid....	24.22	s&l-2*...	selec..	top worm
Kleiber.....AA	2,100	130	solid....	22.50	.....	selec..	top worm
Koehler.....K	1,150	129	solid....	19.61	.....	selec..	int gear
Lambert.....V-2	1,700	144	solid....	29.00	s&l.....	fric...	dbl chn
Lange.....C	1,950	136	solid....	27.20	none....	ind-c..	dbl chn
Larrabee.....M	1,800	130	solid....	22.50	none....	selec..	top worm
Lippard-Stewart.....HW	2,000	135	solid....	22.50	s&l*....	selec..	top worm
Mack.....AB	2,400	144	solid....	25.60	opt.....	selec..	top worm
Mack.....AB	2,400	144	solid....	25.60	opt.....	selec..	dbl chn
Maxfer.....	1,195	130	pneu*...	19.61	s&l.....	selec..	top worm
Maxwell.....	865	124	solid....	21.08	lighting..	selec..	top worm
Menominee.....FW	1,790	130	solid....	22.50	.....	selec..	top worm
Moreland.....	1,900	126	solid....	22.50	lightg*..	selec..	top worm
Nash.....2017	1,495	130	solid*..	22.50	s,l&i-2...	selec..	int-gear
Niles.....B	1,500	124	pneu....	19.61	.....	selec..	top worm
Oneida.....A	2,000	130	solid....	22.50	lighting..	ind-c..	top worm
Palmer.....	1,585	132	solid*...	22.50	.....	prog..	int-gear
Republic.....10	1,195	124	solid....	19.61	s&l*....	selec..	int-gear

ABBREVIATIONS—Types of Construction

*—with other options
cush—cushion
c & s—cushion and solid tires
dbl-chn—double chain drive
dbl-red—double reduction drive
f—drive to front wheels only
4—driving on all four wheels
fric—friction
ind-c—individual clutch, constant mesh
int-gear—internal gear
plan—planetary
pneu—pneumatic
p&s—pneumatic and solid
prog—progressive
selec—selective sliding gearset
sp-bev—spiral bevel
s, l & i—starting, lighting and ignition
s, l & i-2—2-unit starting, lighting and ignition system
s & l-2—2-unit starting and lighting system

Prices are exclusive of the 3 per cent Government war tax

TRUCKS OF 1-TON CAPACITY (Cont'd)

Name and Model	Chassis Price	Wheelbase, Inches	Tires	N.A.C.C. Horsepower	Electric System	Gearset Type	Final Drive
Packard 1-E	$2,450	126*	c&s	25.60	s&l-2*	selec	top worm
Reya 18	995	117	pneu	22.50	s,l&i-2	selec	bevel
Royal		124	solid	16.92		ind-c	top worm
Sandow A	1,485	120	solid*	19.61		selec	top worm
Selden TX	1,550	140	solid	19.61	s&l-2*	selec	int-gear
Service 220	1,500	137	opt	19.61	s&l-2*	selec	top worm
Signal F	1,875	144	solid	22.50	none	selec	top worm
Studebaker	1,350	125	pneu	24.22	s,l&i-2	selec	bevel
Superior A	1,500	124*	solid	19.61		selec	int-gear
Taylor	1,750	134	solid	19.61		selec	top worm
Tiffin AW	1,550	112	solid	19.61	none	selec	top worm
Wichita A	1,750	110	solid	19.61		selec	dbl chn
Wichita K	1,750	118	solid	19.61		selec	top worm
Wilcox S		128	opt	22.50	lightg*	selec	top worm
Wisconsin B	1,650	136	solid	19.61		selec	top worm
Witt Will WD-18	2,000	120	solid*	22.50		selec	top worm

TRUCKS OF 1½-TON CAPACITY

Acason B	$2,100	150	solid	22.50		selec	top worm
Atterbury 7R	2,275	140½	solid	27.20	none	selec	top worm
Beck B	1,275	124	solid	19.61	lightg-2*	selec	int-gear
Brockway J3	2,050	140	solid	22.50	none	selec	top worm
Chase C	2,025	140½	solid	19.61	opt	selec	top worm
Clydesdale 45	2,100	146	solid	27.20	none	selec	top worm
Continental HL	2,100	144	solid	22.50		selec	top worm
Corbitt D	1,900	138	solid*	22.50	s,l&i-2*	selec	top worm
D-E B	1,755	144	solid	22.50	none	selec	top worm
Diamond-T J4	2,200	154	solid	22.50		selec	top worm
Federal T	2,200	144	solid	22.50	s,l&i-2*	selec	top worm
Forschler AX	2,200	138	solid	19.61		selec	top worm
Fulton F2	1,420	136	solid	19.61	opt	selec	int-gear
Garford 66B	2,100	142	solid	27.50	s,l&i-2*	selec	top worm
Gary G		144	solid	29.00	lightg*	selec	top worm
G.M.C 31	2,350	130	solid	22.50	opt	selec	top worm
Gramm-Bernstein W	2,300	130	solid	22.50	none	ind-c	top worm
Hahn	1,950	144*	solid	27.20		selec	top worm
Hawkeye J	1,750	146	solid*	22.50	s,l&i-2*	selec	int-gear
Horner 1918	2,600	145	solid	27.20	lighting	selec	top worm
Hurlburt 1	2,350	136	solid	22.50	lighting	selec	top worm
Kelly-Springfield K31	2,500	144	solid	22.50	s&l-2*	selec	dbl-chn*
Kleiber A	2,500	140	solid	27.20		selec	top worm
Lamson	1,850	150*	solid	25.60		ind-c	top worm
Lane F	1,750	135	solid	19.61	s,l&i-2	selec	top worm
Lange C	1,850	130	solid	22.50		ind-c	dbl chn
Larrabee N	2,000	140	solid	27.20	none	selec	top worm
Lippard-Stewart F	2,450	158	solid	27.20	s&l*	selec	top worm
Maccar L	2,400	150	solid	27.20		selec	top worm
Mack AB	2,800	162*	solid	25.60	opt	selec	top worm*
Manly 30	2,050	156	solid	22.50	s&l*	selec	top worm
Menominee H	2,050	144	solid	22.50		selec	top worm
Moreland	2,500	106	solid	27.20	opt	selec	top worm
Nelson & LeMoon E	1,900	opt	solid	22.50	s,l&i*	selec	top worm
New York M	2,200	144	solid	27.20		ind-c	top worm
Old Reliable	1,950	150*	solid	22.50	lighting	selec	top worm
Oneida B	2,650	130	solid	27.20	lighting	ind-c	top worm
Packard 1½-E	2,800	126	c&s	25.60	s&l-2*	selec	top worm
Republic 11	1,450	144	solid	22.50		selec	int-gear
Sanford W-15	2,200	140	solid	22.50	s,l&i-2	selec	top worm
Service 230	2,200	150	solid	25.60	s&l-2*	selec	top worm
Stewart 9	1,750	140	solid	22.50	—-2*	selec	int-gear
Sullivan F	2,150	129	solid	22.50		selec	top worm
Taylor	2,200	142	solid	22.50		selec	top worm
Tiffin GW	1,970	135	solid	22.50	none	selec	top worm
Triangle A		144	solid	22.50		selec	int-gear
Universal G	1,950	133	solid	22.50	lighting	selec	top worm
White TBC	3,300	145½	p&s	22.50	none	selec	dbl-red
White Hickory H	2,200	144	solid*	22.50		prog	top worm
Wichita L	1,950	118	solid	19.61		selec	top worm
Wilcox X		144	solid	29.00	lightg*	selec	top worm

TRUCKS OF 2-TON CAPACITY

Name and Model	Chassis Price	Wheelbase, Inches	Tires	N.A.C.C. Horsepower	Electric System	Gearset Type	Final Drive
Acason H	$2,400	150	solid	29.00		selec	top worm
Acme A	2,450	148	solid	27.20	lightg*	ind-c	top worm
Armleder HW	2,750	148	solid	27.20	lightg*	selec	top worm
Atterbury 7C	2,675	153½	solid	27.20		selec	top worm
Autocar XXI-F	1,815	97	opt	18.10	lightg*	prog	dbl-red
Available 2	2,450	144	solid	27.20	none	selec	top worm
Beck C	1,750	144	solid	29.00	lightg-2*	selec	int-gear
Bessemer D	2,550	146	solid	27.20	none	selec	top worm
Bessemer J	2,200	158	solid	27.20	none	selec	int-gear
Bethlehem B-1	1,775	144	solid	25.60	none	selec	int-gear
Blair C	2,850	144	solid	29.00	none	ind-c	top worm
Bourne Magnetic VM	3,300	150	solid	25.60	s,l&i-2	selec	top worm
Brockway K3	2,450	148	solid	27.20	none	selec	top worm
Burford O3	2,250	144*	solid	22.50	lighting	selec	int-gear
Clydesdale 65	2,475	163	solid	27.20	none	selec	top worm
Columbia E-T	1,950	144	solid	27.20	lightg*	selec	int-gear
Concord A	2,400	145	solid	29.00	s&l*	selec	top worm
Continental J	2,300	146	solid	27.20		selec	top worm
Corbitt C	2,650	148	solid	27.20	none	selec	top worm
Dart CC-4	2,470	150	solid	29.00	s,l&i*	selec	top worm
Dayton H	2,650		solid	29.00		selec	dbl chn
Denby 13	2,025	144	solid	22.50	s&l	selec	int-gear
DeKalb E-2	2,100	134	solid	27.20	none	selec	top worm
Diamond-T P	2,475	154	solid	27.20		selec	top worm
Dorris L	2,285	144	solid	29.00	s&l-2*	selec	top worm
Fageol	2,750	144	solid	25.60		ind-c	top worm
Fargo P	2,200	146	solid	22.50	s,l&i-2*	selec	int-gear
Federal U	2,450	156	solid	22.50	s,l&i-2*	selec	top worm
Forschler BO	2,475	138	solid	27.20		selec	top worm
Gabriel E	2,500	156	opt	29.00	s&l-2*	selec	top worm
Garford 70B	2,600	142	solid	29.00	s,l&i-2*	selec	top worm
Gary H		156	solid	29.00	lightg*	selec	top worm
G.A.Schacht	2,750	138	solid	29.00	none	selec	top worm
Gersix C	2,500	150*	solid	33.75	s&l	ind-c	top worm
G.M.C 41	2,690	144*	solid	27.20	opt	selec	top worm
Gramm-Bernstein W-2	2,600	146	solid	22.50	none	ind-c	top worm
Hall	2,350	144	solid	27.20	lightg*	selec	top worm
Hendrickson G			solid	29.00			top worm
Horner 1918	2,750	145	solid	15.64	lighting	selec	top worm
Hurlburt 2	3,300	148	solid	29.00	none	selec	top worm
I.H.C G	2,500	135½	solid*	25.60	s&l*	selec	int-gear
Indiana D	2,350	150	solid	27.20		selec	top worm
Independent G	1,850	144	solid	27.20		selec	top worm
Kisselkar	2,275	168	solid	29.00	s&l2*	selec	top worm
Kleiber BB	2,750	140	solid	27.20		selec	top worm
Lange B	2,650	136	solid	27.20	none	ind-c	dbl chn
Lippard-Stewart G	2,700	165	solid	27.20	s&l*	selec	top worm
Lumb C	1,900	148	opt	29.00	lighting	selec	int-gear
Mack AB	3,000	162	solid	25.60	opt	selec	top worm*
Manly 40	2,250	156	solid	22.50	s&l*	selec	top worm
Master M	1,990	144*	solid	29.00		selec	int-gear
Menominee D	2,475	144	solid*	27.20		selec	top worm
Muskegon 20	2,200	144	solid	27.20	lightg*	selec	int-gear
Nash Quad 4017	3,250	124	solid	29.00	s&l-2*	selec	int-gear-4
Nelson & LeMoon E2	2,250	opt	solid	27.20	s,l&i*	selec	top worm
Netco D	2,500	144	solid	27.20	none	selec	top worm
New York N	2,600	144	solid	27.20		ind-c	top worm
Niles E	2,400	140	solid	27.20		selec	top worm
Noble NW-2	2,300	148	solid	27.20	opt		top worm
Old Reliable	2,450	150	solid	25.60	lighting	selec	top worm
Oneida C	3,000	144	solid	27.20	lighting	ind-c	top worm
Packard 2-E	3,200	144	solid	25.60	s&l-2*	selec	top worm
Palmer	2,275	144	solid	27.20		prog	top worm
Peerless TC-2	3,000	145	solid	32.40	lightg*	selec	top worm
Pierce-Arrow	3,300	150	solid	25.60	s,l&i-2*	selec	top worm
Reo J	1,800	146	solid	27.20	s,l&i-2*	selec	dbl chn
Republic A	1,885	144	solid	27.20		selec	int-gear
Rowe CDW	2,800	142	solid	25.60		selec	top worm
Sandow B	2,450	165	solid	27.20		selec	top worm
Selden B		162	solid	27.20	s&l-2*	selec	top worm
Service 240	2,500	160	solid	29.00	s&l-2*	selec	top worm
Signal H	2,375	144	solid	27.20	none	selec	top worm
Standard 70	2,500	140	solid	27.20	none	selec	top worm
Steele C	2,250	115*	solid	27.20	lighting	ind-c	dbl chn
Stegeman	2,600	150	solid	29.45	s&l-2	selec	top worm
Stewart 7	2,195	156	solid	27.20		selec	int-gear
Sullivan E	2,600	150	solid	27.20		selec	top worm
Superior C	2,000	144	solid	22.50		selec	int-gear

ABBREVIATIONS—Types of Construction

*—with other options
cush—cushion
c & s—cushion and solid tires
dbl-chn—double chain drive
dbl-red—double reduction drive
f—drive to front wheels only
4—driving on all four wheels
fric—friction
ind-c—individual clutch, constant mesh
int-gear—internal gear
plan—planetary
pneu—pneumatic
p&s—pneumatic and solid
prog—progressive
selec—selective sliding gearset
sp-bev—spiral bevel
s, l & i—starting, lighting and ignition
s, l & i-2—2-unit starting, lighting and ignition system
s & l-2—2-unit starting and lighting system

Prices are exclusive of the 3 per cent Government war tax

TRUCKS OF 2-TON CAPACITY (Cont'd)

Name and Model	Chassis Price	Wheelbase, Inches	Tires	N.A.C.C. Horsepower	Electric System	Gearset Type	Final Drive
Thomas.....40	$3,000	150	solid....	29.00	lighting..	selec..	top worm
Universal.....D	2,800	132	solid....	29.00	lighting..	selec..	dbl chn
U. S.....E	2,650	144	solid....	27.20	lightg*..	ind-c..	dbl chn
U. S.....H	2,950	144	solid....	27.20	lightg*..	ind-c..	top worm
Velie.....25-A	2,750	150	solid....	27.20	s??.....	selec..	top worm
Wichita.....B	2,250	118	solid....	19.61	s&l*....	selec..	dbl chn
Wilcox.....Q	4,000	150	solid....	32.40	lightg*..	selec..	top worm
Wilson.....	2,550	144	solid....	27.20	opt.....	selec..	top worm
Winther.....47	2,800	150	solid....	25.60	opt.....	prog..	int-gear

TRUCKS OF 2½-TON CAPACITY

Brinton.....F	$2,400	140	solid....	27.20	none....	selec..	top worm
Chase.....B	2,475	160	solid....	27.20	opt.....	selec..	top worm
Corbitt.....B	2,900	148	solid....	27.20	none....	selec..	top worm
D-E.....C	2,365	150	solid....	29.00	none....	selec..	top worm
DeKalb.....E	2,450	136	solid....	27.20	none....	selec..	top worm
Doane.....	3,000	150	solid....	29.00	.....	selec..	dbl chn
Gary.....HU	.....	162	solid....	29.00	lightg*..	selec..	top worm
G.A.Schacht.....	3,000	156	solid....	29.00	none....	selec..	top worm
Gramm-Bernstein.....W	3,150	156	solid....	29.00	opt.....	ind-c..	top worm
Harvey.....W.F.A.	2,500	150	solid....	29.00	s,l&i....	selec..	top worm
Kelly-Springfield.....35	3,000	144	solid....	22.50	s&l-2*...	selec..	top worm*
Kleiber.....B	3,200	150	solid....	32.40	lighting..	selec..	top worm
Lamson.....	2,450	160*	solid....	25.60	lighting..	ind-c..	top worm
Lane.....B	2,500	150	solid....	29.45	s,l&i-2...	selec..	top worm
Lange.....B	2,450	136	solid....	27.20	.....	ind-c..	dbl chn
Larrabee.....O	2,700	154	solid....	27.20	none....	selec..	top worm
Maccar.....H	2,950	162	solid....	32.40	none....	selec..	top worm
Manly.....50	2,600	168	solid....	25.60	s&l*....	selec..	top worm
Moreland.....	3,000	144	solid....	32.40	none....	selec..	top worm
Old Reliable.....	2,750	.....	solid....	29.00	.....	selec..	dbl chn
Rennoc.....	3,250	144	solid....	27.20	lighting..	selec..	top worm
Rowe.....CDW	3,000	164	solid....	25.60	.....	selec..	top worm
Royal.....	.....	132*	solid....	25.60	.....	ind-c..	top worm
Sanford.....W-25	2,800	156	solid....	27.20	none....	selec..	top worm
Selden.....BR	.....	162	solid....	27.20	s&l-2*...	selec..	int-gear
Signal.....J	2,835	150	solid....	27.20	none....	selec..	top worm
Sterling.....	2,950	156	solid....	29.00	none....	selec..	top worm
Taylor.....	2,900	145	solid....	27.20	.....	selec..	top worm
Tiffin.....MC	2,500	140	solid....	27.20	none....	selec..	dbl chn
Tiffin.....MW	2,700	140	solid....	27.20	none....	selec..	top worm
Union.....B	1,990	152	solid....	25.60	lightig*..	selec..	int-gear
Wichita.....R	2,500	144	solid....	22.50	.....	selec..	top worm
Wisconsin.....C	2,500	156	solid....	25.60	.....	selec..	top worm
Witt Will.....WD-18	2,500	144	solid*...	27.20	none....	selec..	top worm

TRUCKS OF 3-TON CAPACITY

A&B.....3T	$4,500	144	solid....	42.76	.....	elec...	int-gear-f
Beech Creek.....3A	3,850	132	solid....	29.00	.....	selec..	bevel
Blair.....D	3,250	144	solid....	29.00	none....	ind-c..	top worm
Chase.....X	2,800	160	solid....	27.20	opt.....	selec..	top worm
Denby.....15	2,525	144	solid....	22.50	s&l.....	selec..	int-gear
F.W.D.....B	4,000	124	solid....	36.15	s&l*....	ind-c..	bevel-4
Gary.....K	.....	162	solid....	32.40	lightg*..	selec..	top worm
Horner.....	3,550	145	solid....	32.40	lighting..	selec..	top worm
Lapeer.....A	1,500	90	solid....	19.61	.....	selec..	int-gear
Manly.....60	3,000	168	solid....	29.00	s&l*....	selec..	top worm
Nelson & LeMoon....E-3	2,950	Opt.	solid....	32.40	s,l&i*...	selec..	top worm
Old Reliable.....	3,250	150	solid....	29.00	lighting..	selec..	top worm
Peerless.....TC-3	3,700	151	solid....	32.40	lightg*..	selec..	dbl chn
Pull-More.....	3,400	153	solid....	32.40	.....	selec..	dbl chn

TRUCKS OF 3-TON CAPACITY (Cont'd)

Name and Model	Chassis Price	Wheelbase, Inches	Tires	N.A.C.C. Horsepower	Electric System	Gearset Type	Final Drive
Riker.....B	$3,900	150	solid....	29.00	s&l*....	selec..	top worm
Schleicher.....	3,500	150*	solid....	29.00	.....	selec..	dbl chn
Steele.....B	3,000	127*	solid....	40.00	lighting..	ind-c..	dbl chn
Stegeman.....	3,000	160	solid....	29.45	s&l-2....	selec..	top worm
United F.W.D.....B	4,000	130	solid....	34.28	lightg-2*	ind-c..	bevel-4
White.....TAD	4,100	163	solid....	22.50	.....	selec..	dbl chn
Winther.....67	3,600	150	solid....	25.60	opt.....	prog..	int-gear

TRUCKS OF 3½-TON CAPACITY

Acason.....L	$3,000	166	solid....	29.00	.....	selec..	top worm
Acme.....C	3,250	168	solid....	32.40	lightg*..	ind-c..	top worm
American.....30	3,450	158	solid....	32.40	opt.....	selec..	top worm
Armleder.....KW	3,600	156	solid....	32.40	lightg*..	selec..	top worm
Atterbury.....7D	3,575	167½	solid....	32.40	.....	selec..	top worm
Available.....3	3,450	156	solid....	32.40	none....	selec..	top worm
Bessemer.....E	3,450	150	solid....	32.40	none....	selec..	top worm
Bourne Magnetic.....XM	4,000	160	solid....	29.00	s,l&i-2...	selec..	top worm
Brockway.....R	3,200	164	solid....	32.40	none....	selec..	top worm
Burford.....D3	3,600	175*	solid....	32.40	lighting..	selec..	top worm
Chase.....O	3,600	175	solid....	29.00*	opt.....	selec..	top worm
Clydesdale.....90	3,400	180	solid....	32.40	none....	selec..	top worm
Continental.....M	3,300	168*	solid....	32.40	.....	selec..	top worm
Corbitt.....A	3,800	168	solid....	32.40	none....	ind-c..	top worm
Couple-Gear.....HC	5,600	144*	solid....	44.20	lighting..	selec..	bevel
Dart.....L	3,400	160	solid....	32.40	opt.....	selec..	top worm
Dayton.....	3,400	.....	solid....	29.00	.....	selec..	top worm
Dayton.....K	3,400	.....	.....	36.15	.....	selec..	dbl chn
Diamond-T.....N	3,750	170	solid....	32.40	.....	selec..	top worm
Duplex.....D	3,600	130*	solid....	29.00	s&l.....	ind-c..	int-gear
Federal.....W	3,150	156	solid....	29.00	s&l-2*...	selec..	top worm
Gabriel.....F	3,250	168	solid*...	32.40	s&l-2*...	selec..	top worm
Garford.....77B	3,700	128	solid....	29.00	s,l&i-2*..	selec..	top worm
G.A.Schacht.....	3,400	168	solid....	29.00	none....	selec..	top worm
G.M.C.....71	3,750*	187*	solid....	32.40	.....	selec..	top worm
Gramm-Bernstein.....W	3,800	158	solid....	32.40	s,l&i-2*..	ind-c..	top worm
Hahn.....	2,900	148*	solid....	32.40	.....	selec..	top worm*
Hall.....	3,250	144	solid....	32.40	lightg*..	selec..	top worm
Harrison.....C	.....	.....	solid....	32.40	.....	selec..	dbl chn
Harrison.....F	.....	.....	solid....	32.40	.....	selec..	dbl chn
Harvey.....WHA	3,250	160	solid....	32.40	s,l&i....	selec..	top worm
Hendrickson.....H	3,000	.....	solid....	32.40	lightg*..	prog..	top worm
Hurlburt.....3	3,850	146	solid....	32.40	none....	selec..	top worm
Indiana.....R	3,000	156	solid....	29.00	none....	selec..	top worm
Kelly-Springfield.....K40	3,850	150	solid....	32.40	s&l-2*...	selec..	dbl chn
King.....	2,800	120	solid....	32.40	none....	ind-c..	dbl chn
Kisselkar.....	3,150	168	solid....	29.00	s&l*....	selec..	top worm
Kleiber.....C	3,850	160	solid....	32.40	lighting..	selec..	top worm
Lamson.....	3,150	170*	solid....	36.15	lighting..	ind-c..	top worm
Lane.....C	3,250	160	solid....	33.75	s,l&i-2...	selec..	top worm
Larrabee.....R	3,400	154	solid....	32.40	none....	selec..	top worm
Maccar.....M	3,600	174	solid....	32.40	none....	selec..	top worm
Mack.....AC	4,250	180	solid....	40.00	opt.....	selec..	dbl chn
Menominee.....G	3,275	160	solid....	32.40	none....	selec..	top worm
Oneida.....D	3,600	160	solid....	32.40	lighting..	ind-c..	top worm
Republic.....T	2,750	165	solid....	29.00	.....	selec..	int-gear
Rowe.....DEW	3,400	158*	solid....	29.00	.....	ind-c..	top worm
Royal.....	.....	158*	solid....	29.00	.....	ind-c..	top worm
Sanford.....W35	3,600	174	solid....	32.40	none....	selec..	top worm
Selden.....C	.....	180	solid....	32.40	s&l-2*...	selec..	top worm
Service.....270	3,300	171	solid....	29.00	s&l-2*...	selec..	top worm
Service.....275	3,600	171	solid....	32.40	s&l-2*...	selec..	top worm
Standard.....65	3,200	156	solid....	32.40	none....	selec..	top worm
Sterling.....	3,900	162	solid....	29.00	lighting..	ind-c..	top worm
Taylor.....	3,650	156	solid....	32.40	.....	selec..	top worm
Thomas.....70	3,500	150	solid....	29.00	lighting..	selec..	top worm
Tiffin.....PW	3,400	156	solid....	32.40	none....	selec..	top worm
U.S.....D	3,350	162	solid....	32.40	lightg*..	ind-c..	dbl chn
U.S.....J	3,650	162	solid....	32.40	lightg*..	ind-c..	top worm
Universal.....L	.....	156	solid....	29.00	lighting..	selec..	dbl chn
Velie.....26A	3,600	172½	solid....	32.40	.....	selec..	top worm
Ware.....	4,000	140	solid....	42.20	lightg*..	selec..	bevel-4
Wichita.....O	3,450	165	solid....	32.40	lightg*..	selec..	top worm
Wilcox.....P	2,900	154	solid....	29.00	lightg*..	selec..	top worm
Wilson.....	3,250	156	solid....	32.40	opt.....	selec..	top worm

ABBREVIATIONS—Types of Construction

*—with other options
cush—cushion
c & s—cushion and solid tires
dbl-chn—double chain drive
dbl-red—double reduction drive
f—drive to front wheels only
4—driving on all four wheels
fric—friction
ind-c—individual clutch, constant mesh
int-gear—internal gear
plan—planetary
pneu—pneumatic
p&s—pneumatic and solid
prog—progressive
selec—selective sliding gearset
sp-bev—spiral bevel
s, l & i—starting, lighting and ignition
s, l & i-2—2-unit starting, lighting and ignition system
s. & l-2—2-unit starting and lighting system

Prices are exclusive of the 3 per cent Government war tax

TRUCKS OF 4-TON CAPACITY

Name and Model	Chassis Price	Wheel-base, Inches	Tires	N.A.C.C. Horse-power	Elec-tric System	Gear-set Type	Final Drive
Kelly-Springfield....K45	$4,000	150	solid....	32.40	s&l-2*...	selec..	dbl chn
Moreland.....	3,800	162	solid....	36.15	none....	selec..	top worm
Old Reliable.....	3,750	.....	solid....	36.15	lighting..	selec..	top worm
Old Reliable.....	3,750	.....	solid....	36.15	lighting..	selec..	dbl chn
Packard.....3-E	3,900	156	solid....	32.40	s&l-2*..	selec..	top worm
Peerless.....TC-4	4,000	151	solid....	32.40	light-2*..	selec..	dbl chn
Riker.....BB	4,050	150	solid....	29.00	s&l*....	selec..	top worm
Signal.....M	3,825	168	solid....	32.40	none....	selec..	top worm
Steele.....BA	3,500	127*	solid....	40.00	lighting..	ind-c..	dbl chn
Stegeman.....	3,800	160	solid....	33.75	s&l-2....	selec..	top worm
Winther.....87	4,000	156	solid....	29.00	opt.....	prog..	int-gear

TRUCKS OF 5-TON CAPACITY

A&B.....5T	$4,750	144	solid....	42.76	.....	elec...	int-gear-f
Acason.....M	4,200	172	solid....	36.15	.....	selec..	top worm
Available.....	4,500	156	solid....	32.40	none....	selec..	top worm
Blair.....F	4,250	144	solid....	32.40	none....	ind-c..	top worm
Clydesdale.....120	4,200	180	solid....	32.40	.....	selec..	top worm
Corbitt.....AA	4,200	168	solid....	32.40	none....	ind-c..	top worm
Couple-Gear.....AC	6,400	144*	solid....	44.20	lighting..	elec...	bevel
Dayton.....M	4,500	.....	solid....	44.20	.....	selec..	dbl chn
Diamond-T.....R	4,600	170	solid....	32.40	.....	selec..	top worm
Federal.....X	4,200	156	solid....	29.00	opt.....	selec..	top worm
Garford.....68	4,500	128	solid....	36.15	s,l&i-2*..	selec..	dnl-chb
G.A.Schacht.....	4,400	168	solid....	29.00	none....	selec..	top worm
G.M.C.....101	4,350*	187*	solid....	32.40	lightg*..	selec..	top worm
Gramm-Bernstein.....WS	4,700	168	solid....	36.15	s,l&i-2*..	ind-c..	top worm
Hall.....	4,200*	144	solid....	32.40	lightg*..	selec..	top worm*
Harvey.....WK-A	4,000	160	solid....	32.40	s,l&i....	selec..	top worm
Horner.....1918	4,750	156	solid....	44.20	lighting..	selec..	top worm
Hurlburt.....	4,600	156	solid....	33.75	none....	selec..	top worm
Indiana.....L	4,000	168	solid....	36.15	.....	selec..	top worm
Kelly-Springfield.....K50	4,600	150	solid....	32.40	s&l-2*...	selec..	dbl chn
Kleiber.....D	4,900	170	solid....	44.20	lightg*..	selec..	top worm
Lamson.....	4,150	180*	solid....	41.62	s&l.....	ind-c..	top worm
Lombard.....	.....	.....	steel....	79.50	none....	selec..	creeper
Moreland.....	4,500	168	solid....	36.15	none....	selec..	top worm
Nelson LeMoon.....E5	3,750	opt.	solid....	32.40	s,l&i*...	selec..	top worm
Old Reliable.....	4,500	150*	solid....	36.15	lighting..	selec..	dbl chn
Peerless.....TC	4,500	151	solid....	32.40	lightg*..	selec..	dbl chn
Packard.....4E	4,375	156	solid....	32.40	s&l-2*...	selec..	top worm
Pierce-Arrow.....	5,000	168	solid....	38.25	s&l*....	selec..	top worm
Republic.....V	4,250	160	solid....	32.40	none....	selec..	nt-gear
Rowe.....GW	4,500	171	solid....	46.15	.....	selec..	top worm
Royal.....	.....	168*	solid....	36.15	.....	ind-c..	top worm
Schleicher.....	4,500	150*	solid....	40.00	.....	selec..	dbl chn
Selden.....D	.....	169	solid....	36.15	s&l-2*..	selec..	top worm
Service.....300	4,300	171½	solid....	32.40	s&l-2*..	selec..	top worm
Signal.....R	4,475	180	solid....	32.40	none....	selec..	top worm
Standard.....85	.....	156	solid....	32.40	none....	selec..	top worm
Steele.....A	4,000	127*	solid....	40.00	lighting..	ind-c..	dbl chn
Stegeman.....	4,500	168	solid....	38.40	s&l-2....	selec..	top worm
Sterling.....	4,750	168	solid....	36.15	lighting..	ind-c..	top worm
Taylor.....	4,600	160	solid....	44.20	.....	selec..	top worm
Tiffin.....RW	4,550	168	solid....	33.75	s,l&i-2...	selec..	top worm
Titan.....	5,000	156	solid....	32.40	lighting..	ind-c..	int-gear
U.S.....K	4,550	168	solid....	36.15	lightg*..	ind-c..	top worm
Walter.....F	5,000	156	solid*...	36.15	s,l&i....	selec..	int-gear-4
White.....TCD	5,000	169	solid....	29.00	.....	selec..	dbl chn
Wichita.....Q	4,000	165	solid....	32.40	s&l-2....	selec..	top worm
Wilcox.....W	.....	162	solid....	36.15	lightg*..	selec..	top worm
Wilson.....	.....	156	solid....	32.40	opt.....	selec..	top worm
Winther.....107	4,600	162	solid....	36.15	s&l.....	prog..	int-gear

TRUCKS OF 5½-TON CAPACITY

Name and Model	Chassis Price	Wheel-base, Inches	Tires	N.A.C.C. Horse-power	Elec-tric System	Gear-set Type	Final Drive
Maccar.....U	$4,500	186	solid....	32.40	.....	selec..	top worm
Mack.....AC	4,750	180	solid....	40.00	opt.....	selec..	dbl chn

TRUCKS OF 6-TON CAPACITY

Doane.....	$4,750	178	solid....	36.15	.....	selec..	dbl chn
Garford.....69	4,700	128	solid....	42.20	s,l&i-2*..	selec..	dbl chn
Garford-Road.....	5,650	128	steel....	42.20	.....	selec..	dbl chn
G.V. Mercedes.....	.....	192½	solid....	29.00	.....	selec..	int-gear
Kelly-Springfield.....K60	4,750	150	solid....	32.40	s&l-2*...	selec..	dbl chn
Packard.....5E	4,900	156	solid....	40.00	s&l-2*...	selec..	top worm
Peerless.....TC-6	5,000	151	solid....	32.40	lightg*..	selec..	dbl chn
Royal.....	.....	158*	solid....	42.20	.....	ind-c..	top worm
Tiffin.....SW	4,650	168	solid....	33.75	s,l&i-2...	selec..	top worm
Winther.....127	5,000	162	solid....	42.20	s&l.....	prog..	int-gear

TRUCKS OF 7-TON CAPACITY

Hurlburt.....	$5,500	156	solid....	33.75	none....	selec..	top worm
Old Reliable.....	5,000	150	solid....	41.62	lighting..	selec..	dbl chn
Packard.....6E	5,150	156	solid....	40.00	s&l-2*...	selec..	top worm
Royal.....	.....	158*	solid....	44.20	.....	ind-c..	dbl chn
Stegeman.....	5,000	168	solid....	38.40	s&l-2....	selec..	top worm
Sterling.....	5,250	168	solid....	36.15	lightg....	ind-c..	dbl chn
Western.....	4,600	146	solid....	36.15	lightg*..	selec..	dbl chn

TRUCKS OF 7½-TON CAPACITY

Dayton.....E	$4,950	.....	solid....	44.20	.....	selec..	dbl chn
Mack.....AC	5,000	180	solid....	40.00	opt.....	selec..	dbl chn

TRACTORS

Acason.....	$2,500	114	solid....	29.00	.....	selec..	top worm
Acason.....	3,800	130	solid....	36.15	.....	selec..	top worm
Barber.....3	2,500	84	solid....	29.00	none....	selec..	top worm
Harvey.....HT	4,000	125	solid....	32.40	s,l&i....	selec..	top worm
Highway.....A	.....	93	solid....	22.50	none....	selec..	int-gear
Knox.....35	4,500	108½	solid....	40.00	s&l-2....	selec..	dbl chn
Knox Towing.....36	5,000	108½	solid....	40.00	s&l-2....	selec..	dbl chn
Koehler.....KT	1,550	106	solid....	19.61	.....	selec..	int-gear
Lapeer.....C	1,900	90	solid....	19.61	none....	selec..	int-gear
Mack.....AB	3,100	120	solid....	25.60	opt.....	selec..	dbl chn
Mack.....AC	4,250	119	solid....	40.00	opt.....	selec..	dbl chn
Mack.....AC	4,750	119	solid....	40.00	opt.....	selec..	dbl chn
Mack.....AC	5,000	119	solid....	40.00	opt.....	selec..	dbl chn
Rennoc.....	3,250	116	solid....	2.720	lighting..	selec..	top worm
Transport.....T	2,750	80	solid....	22.50	none....	selec..	top worm
Transport.....T	2,750	80	solid....	19.60	.....	selec..	top worm
Watson.....	4,050	80	solid....	32.40	none....	selec..	top worm

ABBREVIATIONS—Types of Construction

*—with other options
cush—cushion
c & s—cushion and solid tires
dbl-chn—double chain drive
dbl-red—double reduction drive
f—drive to front wheels only
4—driving on all four wheels
fric—friction
ind-c—individual clutch, constant mesh
int-gear—internal gear
plan—planetary
pneu—pneumatic
p&s—pneumatic and solid
prog—progressive
selec—selective sliding gearset
sp-bev—spiral bevel
s, l & i—starting, lighting and ignition
s, l & i-2—2-unit starting, lighting and ignition system
s & i-2—2-unit starting and lighting system

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Details of 475 Gasoline, Electric and Steam Motor Truck Chassis of Types of Engines, Transmissions, Control and Ec

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE				COOLING			IGNITION			ELEC. SYSTEM			GOVERNOR		
				Make	Material	Type	Kind	Size in Ins. Front	Size in Ins. Rear		Make	No. Cyl. Bore and Stroke—N.A.C.C., Hp.	Cylinders Cast	Water Circ.	Radiator Make	Radiator Core and Case	Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make	Drive
A. & B.....3T	3	$4,500	144	own...	rol-c.	s-flx..	s....	48x3½d	48x3½d	wd..	own..	4-5.17x4¼-42.8	2	gear...	Bush.	fin-sht...	dual.-	Bosch.	hand-	none..	none..	.....	none.	none.	.....
A. & B.....5T	5	4,750	144	own...	rol-c.	s-flx..	s....	48x3½d	48x5d	wd..	own..	4.-517x4¼-42.8	2	gear...	Bush.	fin-sht...	dual.-	Bosch.	hand-	none..	none..	.....	none.	none.	.....
Acason.....B	1½	2,100	150	.....	p-stl.	.....	s....	34x3½s	36x5s	wd..	Wau.	4-3½x5½-22.5	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acason.....H	2	2,400	150	.....	p-stl.	.....	s....	34x4s	36x7*	wd..	Wau.	4-4½x5½-28.9	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acason.....L	3½	3,000	166	.....	p-stl.	.....	s....	34x5s	36x5d	wd..	Wau.	4-4½x5½-28.9	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acason.....M	5	4,200	172	.....	p-stl.	.....	s....	36x6s	40x6d*	wd..	Wau.	4-4½x6½-36.1	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acason.....Tractor	.....	2,500	114	.....	.....	.....	s....	34x4s	36x7s*	wd..	Wau.	4-4½x5½-28.9	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acason.....Tractor	.....	3,800	130	.....	p-stl.	.....	s....	34x5s	36x6d	wd..	Wau	4-4½x6½-36.1	2	cent...	own..	cel-cst..	sing..	Eismn	hand-	.....	.....	.....	cent-	Wau....	motor
Acme.....B	1	1,750	130	.....	p-stl.	s-flx..	s....	34x3s	34x4s	wd..	Con..	4-3½x5 -22.5	4	ther...	Long.	fin-sht...	sing..	Eismn	hand-	.....	G&D–	100	cent-	Pierce...	motor
Acme.....A	2	2,450	148	.....	p-stl.	s-flx..	s....	36x4s	36x6s	wd..	Con..	4-4½x5½-27.2	4	cent...	Long.	fin-sht...	sing..	Eismn	hand-	ltg....	G&D–	75	cent-	Pierce...	motor
Acme.....C	3½	3,250	168	.....	rol-c.	s-flx..	s....	36x5s	40x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Long.	fin-cst..	sing..	Eismn	hand-	ltg....	G&D–	75	cent-	Pierce...	motor
American.....30	3½	3,450	158	Dtrt..	p-stl.	rigid..	s....	36x5s	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Long.	fin-cst..	sing..	Eismn	hand-	opt....	opt....	.....	cent-	Pierce...	motor
Armleder.....HW	2	2,750	148	Smth–	p-stl.	flex..	s....	36x4s	36x7s	wd..	Con..	4-4½x5½-27.2	4	cent...	Long.	fin-cst..	sing..	Eismn	hand-	ltg....	opt....	.....	cent-	Pierce...	shaft.
Armleder.....KW	3½	3,600	156	.....	rol-i..	flex..	s....	36x5s	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Long.	fin-cst..	sing..	Eismn	hand-	opt....	opt....	.....	cent-	Pierce...	shaft.
Atlas.....18	¼	885	106	Prsh..	p-stl.	flex..	pnu..	31x4	31x4	wd	Lyc..	4-3½x5 -16.9	4	ther...,	.....	cel-sht..	sing.,	.....	.....	.....	Remy.	.....	.....	.....	.....
Atterbury.....7R	1½	2,275	140½	.....	p-stl.	flex..	s....	36x3½s	36x5s	wd..	Con..	4-4½x5½-27.2	4	cent...	own..	fin-cst..	sing..	Eismn	fixed	none..	none..	.....	cent-	Pierce...	motor
Atterbury.....7C	2	2,675	153½	.....	p-stl.	flex..	s....	36x3½s	36x4d	wd..	Con..	4-4½x5½-27.2	4	cent...	own..	fin-cst..	sing..	Eismn	fixed	none..	none..	.....	cent-	Pierce...	motor
Atterbury.....7D	3½	3,575	167½	.....	p-stl.	flex..	s....	36x5s	40x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	own..	fin-cst..	sing..	Eismn	hand.	none..	none..	.....	cent-	Pierce...	motor
Autocar.....XXI-F	2	1,815	97	.....	p-stl.	.....	opt..	34x4s	34x5s	wd..	own..	2-4¼x4½-18.1	1	cent...	own..	fin-sht..	sing..	Bosch*	fix..	ltg....	opt....	.....	.....	.....	.....
Available.....1	1	1,775	132	.....	rol-c.	s-flx..	s....	36x3½s	36x5s	wd..	Con..	4-3½x5 -22.5	4	ther...	Chgo	cel-sht..	sing..	Bosch.	fix..	none..	none..	.....	none.	none.	.....
Available.....2	2	2,450	144	.....	rol-c.	s-flx..	s....	36x4s	36x7s	wd..	Con..	4-4½x5½-27.2	4	cent...	Chgo	cel-sht..	sing..	Bosch.	fix..	none..	none..	.....	none.	none.	none.
Available.....3	2½	3,450	156	.....	rol-c.	s-flx..	s....	36x5s	40x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Chgo	cel-cst..	sing..	Bosch.	fix..	none..	none..	.....	cent-	Pierce...	motor
Available.....5	5	4,500	156	.....	rol-c.	s-flx..	s....	36x6s	40x6d	wd..	Con..	4-4½x5½-32.4	2	cent...	Chgo	cel-cst..	sing..	Bosch.	fix..	none..	none..	.....	cent-	Pierce...	motor
Avery.....B	2	2,700	128	.....	.....	.....	s....	36x4	36x3½d	.....	.....	4-4½x5 -36.1	1	cent...	.....	.....	.....	Eismn	.....	.....	.....	.....	cent-	.....	motor
Avery.....B	3	3,200	128	.....	.....	.....	s....	38x5	38x4d	.....	.....	4-4½x5 -36.1	1	cent...	.....	.....	.....	Eismn	.....	.....	.....	.....	cent-	.....	motor
Avery.....A	3	2,500	140	.....	.....	.....	s....	38x5	38x4d	wd..	.....	4-4½x5 -36.1	1	cent...	.....	.....	.....	.....	.....	.....	.....	.....	cent-	.....	motor
Barber Tractor.....3	6	2,500	84	own...	rol-c.	rigid..	s....	34x3½s	34x7s	wd..	Buda	4-4½x5½-28.9	4	cent...	own..	sq-t-ci...	dual.-	Bosch.	hand-	none..	none..	.....	none.	none.	motor
Beck.....A	1	1,080	124	P&B..	p-stl.	rigid..	s....	34x3s	34x4s	wd..	Con..	4-3½x5 -19.6	2	ther...	Idl...	cel-p-s..	dual.-	Bosch.	fix..	ltg2..	Vesta.	80	cent-	Pierce...	motor
Beck.....B	1½	1,275	124	P&B..	p-stl.	rigid..	s....	34x3s	34x5s	wd..	Con..	4-3½x5½-19.6	4	ther...	Idl...	cel-p-s..	dual.-	Bosch.	fix..	ltg....	Vesta.	80	cent-	Pierce...	motor
Beck.....C	2	1,750	144	P&B..	p-stl.	.....	s....	34x4s	34x6s	wd..	Con..	4-4½x5½-28.9	2	gear...	Idl...	cel-p-s..	dual.-	Bosch.	fix..	ltg....	Vesta.	80	cent-	Pierce...	motor
Beech Creek.....3A	3	3,850	132	Prsh..	.....	.....	s....	36x6	36x6	....	Wau.	4-4½x5¾-28.9	2	cent...	.....	.....	.....	.....	.....	.....	.....	.....	cent-	Wau....	motor
Bessemer.....G	1	1,250	124	Savg..	p-stl.	rigid..	s....	34x3s	34x4s	wd..	Con..	4-3½x5 -19.6	4	ther...	Idl...	cel-sht..	sing.	Spltf..	hand-	none..	none..	.....	none.	none.	motor
Bessemer.....D	2	2,250	146	Savg..	p-stl.	rigid..	s....	36x4s	36x4d	wd..	Con..	4-4½x5½-27.2	4	pump..	Idl...	cel-cst..	sing.	Spl:f..	hand-	none..	none..	.....	cent-	Pierce...	motor
Bessemer.....J	2	2,200	158	Savg..	p-stl.	rigid..	s....	36x4s	36x4d	wd..	Con..	4-4½x5½-27.2	4	cent...	Idl...	cel-cst..	sing.	Spltf..	hand-	none..	none..	.....	cent-	Pierce...	motor
Bessemer.....E	3½	3,450	150	Savg..	p-stl.	rigid..	s....	36x5s	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Idl...	cel-cst..	sing.	Spltf..	hand-	none..	none..	.....	cent-	Pierce...	motor
Bethlehem.....A1	1½	1,245	126	Dtrt..	p-stl.	s-flx..	opt.	34x3s	34x4s	wd..	GBS.	4-3½x4½-22.5	4	ther...	Fed..	z-p-stl..	sing.	Blng..	hand-	none..	none..	.....	cent-	Pierce...	shaft.
Bethlehem.....B1	2½	1,775	144	Dtrt..	p-stl.	s-flx..	s....	34x4s	34x6s	wd.	N-A.-	4-4 x4½-25.5	2	ther...	Fed..	z-p-stl..	sing.	Blng..	hand-	none..	none..	.....	cent-	Pierce...	shaft.
Blair.....C	2	2,850	144	.....	p-stl.	flex..	s....	34x4s	34x3½d	wd.	Wau.	4-4½x5½-38.9	2	cent...	Idl...	z-t-sht..	sing.	Eismn	auto	none..	none..	.....	cent-	Wau....	motor
Blair.....D	3	3,250	144	.....	p-stl.	flex..	s....	36x5s	36x5d	wd.	Wau.	4-4½x5½-28.9	2	cent...	Idl...	z-t-sht..	sing.	Eismn	auto	none..	none..	.....	cent-	Wau....	motor
Blair.....F	5	4,250	144	.....	p-stl.	flex..	s....	36x6s	36x6s	wd.	Wau.	4-4½x6½-32.4	2	cent...	Idl...	z-t-sht..	sing.	Eismn	auto	none..	none..	.....	cent-	Wau....	motor
Bourne.....VM	2	3,300	150	Prsh..	p-stl.	flex..	s....	36x4s	36x4d	wd..	Her..	4-4 x5½-25.6	4	cent...	G&O.	cel-cst..	sing.	Eismn	fix..	sl&i2..	Entz..	none	cent-	Simplex.	motor
Bourne.....XM	3½	4,000	160	Prsh..	p-stl.	flex..	s....	36x5s	36x5d	wd..	Her..	4-4½x5½-28.9	4	cent...	G&O.	cel-cst..	sing.	Eismn	fix..	sl&i2..	Entz..	none	cent.	Simplex.	motor
Brinton.....H	1	1,250	125	.....	.....	.....	pnu..	33x4½s	33x4½s	wd..	Wis..	4-3½x5 -16.9	4	ther...	.....	fin-sht..	sing.	.....	fix..	ltg....	.....	.....	none.	none.	none.
Brinton.....F	2½	2,400	140	.....	.....	.....	s....	36x4*	36x6*	wd.	Con..	4-4½x5½-27.2	4	cent...	.....	fin-sht..	sing.	Bosch.	fix..	.....	.....	none	cent-	.....	motor
Briscoe.....24	¼	725	104	own...	p-stl.	flex..	.....	31x4s	31x4s	wd..	own..	4-3⅞x5½-16.2	4	ther...	Har..	sq-t-ps..	dual.-	Conn–	hand-	.....	Aut-L-	none	none	none.	none.
Briscoe.....T-24	1	1,000	132	own...	p-stl*	s-flx..	pnu.	31x4s	34x3½s	wd..	own..	4-3⅞x5½-16.2	4	ther...	S-W.-	zz-t-ps..	sing.	Conn–	hand-	s&l2..	Aut-L-	.....	none.	none.	none.
Brockway.....J3	1½	2,050	140	Prsh..	p-stl.	flex..	s....	36x3½s	36x5s	wd..	Con..	4-3½x5½-22.5	4	cent...	Bush.	fin-cst..	sing.	Bosch.	fix..	none..	none..	.....	suct.	Mnrch.	motor
Brockway.....K3	2	2,450	148	Prsh..	p-stl.	flex..	s....	36x4s	36x7s	wd..	Con..	4-4½x5½-27.2	4	cent...	Bush.	fin-cst..	sing.	Bosch.	fix..	none..	none..	.....	suct.	Mnrch.	motor
Brockway.....R	3½	3,200	164	Prsh..	p-stl.	flex..	s....	36x5s	36x5d	wd.	Con..	4-4½x5½-32.4	4	cent...	Bush.	fin-cst..	sing.	Simms	fix..	none..	none..	.....	suct.	Mnrch..	motor
Buick.....	¼	790	106	.....	.....	.....	.....	31x4	31x4	....	own..	4-3½x4½-18.2	4	pump..	.....	.....	sing.	Delco.	hand-	s&l...	Delco.	.....	.....	.....	.....
Burford.....O3	2	2,250	144*	.....	.....	.....	s....	36x3½	36x3½d	....	Buda	4-3½x5½-22.5	4	pump..	.....	.....	sing.	Eismn	fix..	ltg....	.....	.....	none.	none.	.....
Burford.....D3	3½	3,600	175*	.....	.....	.....	s....	38x5	38x5d	....	Wau.	4-4½x6½-32.4	4	pump..	.....	.....	sing.	Eismn	fix..	ltg....	.....	.....	cent-	Wau....	.....
Chase.....A	1	1,725	138	.....	p-stl.	s-flx..	opt.	36x3½s	36x5s	wd..	Wau.	4-3½x5½-19.6	4	cent...	Bush.	fin-sht..	sing..	Bosch.	fix..	opt....	opt....	.....	cent-	Mnrch..	motor
Chase.....C	1½	2,025	149	.....	p-stl.	s-flx..	s....	36x3½s	36x6s	wd..	Wau.	4-3½x5½-19.6	4	cent...	Bush.	fin-sht..	sing..	Bosch.	fix..	opt....	opt....	.....	suct.	Mnrch.	motor
Chase.....B	2½	2,475	160	.....	p-stl.	s-flx..	s....	36x4s	36x4d	c-s..	Bud–	4-4½x5½-27.2	4	cent...	Bush.	fin-cst..	sing..	Bosch.	fix..	opt....	opt....	.....	suct.	Mnrch.	motor
Chase.....X	3	2,800	160	.....	p-stl.	s-flx..	s....	36x4s	36x5d	wd.	Bud–	4-4½x5½-27.2	4	cent...	Bush.	fin-cst..	sing..	Bosch.	fix..	opt....	opt....	.....	suct.	Mnrch.	motor
Chase.....O	3½	3,600	175	.....	p-stl.	s-flx..	s....	36x5s	36x5d	c-s..	Con*.	4-4½x5½-32.4*	2*	cent...	Bush.	fin-cst..	sing..	Bosch.	fix..	opt....	opt....	.....	suct.	Mnrch.	motor
Clydesdale.....25	¼	.....	124	.....	p-stl.	s-flx..	pnu..	34x4½s	34x4½s	wd..	Con..	4-3½x5 -19.6	4	ther...	own..	p-t-c-a..	sing..	Bosch.	fix..	.....	.....	.....	.....	.....	.....
Clydesdale.....45	1½	.....	146	.....	p-stl.	s-flx..	s....	36x3½s	36x5s	wd.	Con..	4-4½x5½-27.2	4	cent...	own..	p-t-c-a..	sing..	Bosch.	hand-	none..	none..	.....	cent-	own....	motor
Clydesdale.....65	2	.....	163	.....	p-stl.	s-flx..	s....	36x4s	36x6s*	wd.	Con..	4-4½x5½-27.2	4	cent...	own..	p-t-c-a..	sing..	Bosch.	hand-	none..	none..	.....	cent-	own....	motor
Clydesdale.....90	3½	.....	180	.....	p-stl.	s-flx..	s....	36x5s	36x5d	wd.	Con..	4-4½x5½-32.4	2	cent...	own..	p-t-c-a..	sing..	Bosch.	hand-	none..	none..	.....	cent-	own....	motor
Clydesdale.....120	5	.....	180	.....	p-stl.	s-flx..	s....	36x6s	40x6d	wd.	Con..	4-4½x5½-32.4	2	cent...	own..	p-t-c-a..	sing..	Bosch.	hand-	none..	none..	.....	cent-	own....	motor
Collier.....M	¼	900	118	Savg..	.....	.....	pnu-	32x4	32x4	....	Lyc..	4-3½x5 -16.9	4	.....	.....	.....	.....	Conn–	hand-	.....	.....	.....	.....	.....	.....

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
flx—fixed
flex—flexible
fric—friction
grav—gravity
gset—gearset
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square tube core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk in oil
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag tube core sheet case

Prices are exclusive of the 3 per cent Government war tax

ine Commercial Vehicles for 1918

roduced by 166 American Manufacturers, With Full Particulars d Equipment and Names of Principal Parts

ENGINE					TRANSMISSION									BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH	GEARSET				FINAL DRIVE							STEERING GEAR					
Truck in M.p.h.	Carbureter, Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Springs, Make	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
.....	Schblr..	grav..	none..	none...	elec....	none...	amid..	2	in-g...	own....	.....	r-rd....	r-rd....	Perf...	ext-r-w.	ext-f-w.	r....	Gem..	r....	metl..	Franck.	A. & B.....3T
.....	Schblr..	grav..	none..	none...	elec....	none...	amid..	2	in-g...	own....	.....	r-rd....	r-rd....	Perf...	ext-r-w.	ext-f-w.	r....	Gem..	r....	metl..	Franck.	A. & B.....5T
18	Stmbg..	vacm..	d-p...	B-Beck.	selec...	Covert.	mtr...	3	worm.	Timkn.	7.75	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood..	Acason.....B
15	Schblr..	vacm..	d-d...	Muncie	selec...	Muncie	mtr...	4	worm.	Timkn.	7.75	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood..	Acason.....H
12	Schblr..	vacm..	d-d...	Muncie	selec...	Muncie	mtr...	4	worm.	Timkn.	10.3	spgs...	spgs...	Dtrt...	int-r-w.	int.....	r....	Ross..	c....	metl..	Blood..	Acason.....L
10	Stmbg..	vacm..	d-p...	B-Beck.	selec...	Cotta..	mtr...	3	worm.	Timkn.	11.6	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood..	Acason.....M
15	Schblr..	vacm..	d-d...	Muncie	selec...	Muncie	mtr...	4	worm.	Timkn.	9.25	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood..	Acason.....Tractor
10	Stmbg..	vacm..	d-p...	B-Beck.	selec...	Cotta..	mtr...	3	worm.	Timkn.	10.3	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood..	Acason.....Tractor
22	Rayfld..	vacm..	d-p...	B-Beck.	mesh...	Cotta..	mtr...	3	worm.	Timkn.	7.75	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Acme.....B
17	Rayfld..	vacm..	d-p...	B-Beck.	mesh...	Cotta..	mtr...	3	worm.	Timkn.	9.25	spgs...	spgs...	Dtrt...	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Acme.....A
14	Rayfld..	vacm..	d-p...	B-Beck.	.....	Cotta..	amid..	3	worm.	Timkn.	12.00	r-rd....	spgs...	Dtrt...	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Acme.....C
14	Stmbg..	grav..	d-p...	Detlaf..	selec...	Covert.	amid..	4	worm.	Shel...	8.75	spgs...	spgs...	Perf...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	M-Eva.	American.....30
15	Schblr..	grav..	d-p...	B-Beck.	selec...	Covert.	mtr...	3	worm.	Timkn.	8.50	r-rd....	spgs...	Mthr...	int-r-w.	int-r-w.	l....	Ross..	c....	metl..	Spicer.	Armleder.....HW
12	Schblr..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Timkn.	8.75	r-rd....	spgs...	Mthr...	int-r-w.	ext-d-s.	l....	Gem..	c....	metl..	Spicer.	Armleder.....KW
.....	Carter..	.....	.....	B-Beck.	selec...	.....	mtr...	3	bevl..	Hess...	4.75	spgs...	spgs...	.....	ext-r-w.	int-r-w.	.....	Lavn..	.....	metl..	Arvac..	Atlas.....18
15	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Timkn.	8.5	spgs...	spgs...	.....	int-r-w.	int-r-w.	r....	Gem..	r....	.....	.....	Atterbury.....7R
15	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Timkn.	8.5	spgs...	spgs...	.....	int-r-w.	int-r-w.	r....	Gem..	r....	.....	.....	Atterbury.....7C
13	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Timkn.	10.3	spgs...	spgs...	.....	int-r-w.	int-r-w.	r....	Gem..	r....	.....	.....	Atterbury.....7D
.....	Stmbg..	grav..	d-p...	own...	prog...	own...	amid..	3	d-rd...	own....	7.15	spgs...	spgs...	.....	int-r-w.	ext-r-w.	r....	own...	r....	.....	.....	Autocar.....XXI-F
.....	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Timkn.	7.00	r-rd....	spgs...	Tut....	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Available.....1
.....	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Timkn.	7.75	r-rd....	spgs...	Tut....	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Available.....2
14	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Timkn.	10.30	r-rd....	spgs...	Tut....	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Available.....3
12	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Timkn.	11.7	r-rd....	spgs...	Tut....	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Available.....5
14½	Rayfld..	.....	d-d...	.....	selec...	.....	jst...	3	chn...	.....	3.5	r-rd....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Avery.....B
13	Rayfld..	.....	d-p...	.....	selec...	.....	jst...	3	chn...	.....	3.5	r-rd....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Avery.....B
12	Rayfld..	.....	d-d...	.....	selec...	.....	jst...	3	chn...	.....	3.5	r-rd....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Avery.....A
.....	Stmbg..	grav..	d-p...	own...	selec...	Fuller.	mtr...	3	worm.	own....	.....	spgs...	spgs...	own...	int-r-w.	ext-r-w.	l....	Ross..	c....	.....	.....	Barber Tractor.....3
18	Stmbg..	grav..	d-d...	Fuller.	selec...	Fuller.	mtr...	3	in-g...	Clark..	.....	.....	.....	Hig....	ext-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Blood..	Beck.....A
18	Stmbg..	grav..	d-d...	Fuller.	selec...	Fuller.	.....	3	in-g...	Clark..	6.00	.....	.....	Hig....	ext-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Blood..	Beck.....B
12	Stmbg..	grav..	d-d...	Fuller.	selec...	Fuller.	mtr...	3	in-g...	Clark..	9.00	.....	.....	Hig....	ext-r-w.	in-tr-w.	l....	Lavn..	c....	metl..	Blood..	Beck.....C
12	King....	.....	d-p...	B-Beck.	selec...	own...	amid..	6	bevl..	own....	8.0	r-rd....	spgs...	.....	ext-r-w.	ext-sht.	l....	own...	.....	metl..	.....	Beech Creek.....3A
.....	Zenith--	grav..	d-d...	Fuller.	selec...	Fuller.	mtr...	3	in-g...	Torb...	7.0	spgs...	spgs...	Perf...	ext-r-w.	int-r-w.	l....	Ross..	r....	metl..	Blood..	Bessemer.....G
15	Rayfld..	grav..	cone..	Hartfd.	selec...	B-Lipe.	amid..	3	worm.	Timkn.	8.0	spgs...	spgs...	Perf...	int-r-w.	ext-....	l....	Ross..	r....	metl..	Spicer.	Bessemer.....D
15	Rayfld..	grav..	cone..	Hartfd.	selec...	B-Lipe.	amid..	3	in-g...	Torb...	8.0	r-rd....	spgs...	Perf...	ext-r-w.	int-f-w.	l....	Ross..	r....	metl..	Blood..	Bessemer.....J
12	Rayfld..	grav..	cone..	Hartfd.	selec...	B-Lipe.	amid..	3	worm.	Timkn.	10.3	r-rd....	spgs...	Perf...	int-r-w.	ext-r-w.	l....	Ross..	r....	metl..	Spicer.	Bessemer.....E
18	Schblr..	grav..	d-p...	GBS...	selec...	Dtrt...	mtr...	3	in-g...	Russl..	7.4	spgs...	spgs...	Shel...	ext-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Univ..	Bethlehem.....A1
15	Schblr..	grav..	d-d...	Dtrt...	selec...	Dtrt...	mtr...	3	in-g...	Russl..	8.3	spgs...	spgs...	Shel...	ext-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Univ..	Bethelehem.....B1
14	Zenith--	grav..	cone..	own...	mesh...	Cotta..	amid..	3	worm.	Key-H.	7.67	r-rd....	s-fr....	Shel...	int-r-w.	ext-d-s.	r....	Lavn..	r....	.....	.....	Blair.....C
12	Zenith--	grav..	cone..	own...	mesh...	Cotta..	amid..	3	worm.	Key-H.	8.67	r-rd....	s-fr....	Shel...	int-r-w.	ext-d-s.	r....	Lavn..	r....	.....	.....	Blair.....D
10	Zenith--	grav..	cone..	own...	mesh...	Cotta..	amid..	3	worm.	Key-H.	9.33	r-rd....	s-fr....	Shel...	int-r-w.	ext-....	r....	Lavn..	r....	.....	.....	Blair.....F
15	Zenith--	grav..	elec....	.....	elec....	.....	.....	.....	worm.	Timkn.	.....	r-rd....	spgs...	Mthr...	int-r-w.	int-r-w.	l....	own...	l....	metl..	Blood..	Bourne.....VM
12	Zenith--	grav..	elec....	.....	elec....	.....	elec....	.....	worm.	Timkn.	.....	r-rd....	spgs...	Mthr...	int-r-w.	int-r-w.	l....	Ross..	l....	metl..	Blood..	Bourne.....XM
.....	.....	pres..	d-d...	.....	selec...	.....	mtr...	3	worm.	.....	6.2	spgs...	spgs...	.....	int-r-w.	int-f-w.	l....	.....	c....	.....	.....	Brinton.....H
.....	.....	grav..	d-d...	.....	selec...	.....	mtr...	3	worm.	.....	7.75	spgs...	spgs...	.....	int-r-w.	int-r-w.	l....	.....	c....	.....	.....	Brinton.....A
.....	Buick..	grav..	cone..	own...	selec...	own...	r-ax..	3	bev..	own....	4.25	tor-a...	tor-a...	.....	int-r-w.	ext-r-w.	l....	own...	r....	metl..	own....	Briscoe.....24
.....	Buick..	grav..	cone..	own...	selec...	own...	j-st...	3	chn...	own....	9.0	r-rd....	.....	.....	int-r-w.	ext-j-s.	l....	own...	c....	metl..	own....	Briscoe.....T-24
15	Schebir.	grav..	cone..	Hart...	selec...	B-Lipe.	amid..	3	worm.	Shel...	8.66	spgs...	spgs...	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Spicer.	Brockway.....J3
15	Schblr.	grav..	cone..	Hart...	selec...	B-Lipe.	amid..	3	worm.	Timkn.	8.5	r-rd....	spgs...	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Spicer.	Brockway.....K3
12	Schblr.	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	amid..	3	worm.	Timkn.	10.5	r-rd....	spgs...	Merl...	int-r-w.	int-r-w.	.....	Lavn..	c....	metl..	Spicer.	Brockway.....R
.....	Marvel.	vacm..	d-d...	own...	selec...	own...	mtr...	.....	bevl..	Timkn.	4.0	.....	.....	.....	int-r-w.	ext-r-w.	.....	.....	.....	.....	.....	Buick.....
15	Zenith..	grav..	cone..	Warner	selec...	Warner	mtr...	3	in-g...	own....	8.5	spgs...	spgs...	.....	exts-ht.	ext-r-w.	.....	Ross..	.....	.....	.....	Burford.....O3
13	Zenith..	vacm..	d-d...	B-Lipe.	selec...	B-Lipe.	amid..	4	worm.	Shel...	13.1	r-rd....	spgs...	.....	int-f-w.	int-r-w.	.....	Ross..	.....	.....	.....	Burford.....D3
18	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Shel...	7.8	spgs...	spgs...	Perf...	int-r-w.	int-r-w.	l....	Lavn..	c....	.....	.....	Chase.....A
16	Stmbg..	grav..	d-p...	B-Beck.	selec...	Cotta..	mtr...	3	worm.	Shel...	8.66	spgs...	spgs...	Perf...	int-r-w.	ext-r-w.	l....	Lavn..	c....	.....	.....	Chase.....C
14	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm.	Shel...	8.66	spgs...	spgs...	Perf...	int-r-w.	ext-r-w.	l....	Lavn..	c....	.....	.....	Chase.....B
12	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Shel...	9.25	spgs...	spgs...	Perf...	int-r-w.	int-r-w.	l....	Lavn..	c....	.....	.....	Chase.....X
12	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Shel...	8.75	spgs...	spgs...	Perf...	ext-r-w.	ext-r-w.	l....	Lavn..	c....	.....	.....	Chase.....O
.....	Zenith..	grav..	cone..	Dtrt...	selec...	Dtrt...	mtr...	3	bevl..	Slsby...	5.83	spgs...	tor-a...	Hess...	int-r-w.	ext-r-w.	r....	Ross..	c....	.....	.....	Clydesdale.....25
15	Zenith..	grav..	disk...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm.	Timkn.	7.75	spgs...	spgs...	Perf...	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Clydesdale.....45
14	Zenith..	grav..	disk...	B-Lipe.	selec...	B-Lipe.	amid..	4	worm.	Timkn.	8.5	r-rd....	spgs...	Perf...	int-r-w.	int-r-w.	r....	Ross..	r....	.....	.....	Clydesdale.....65
12	Zenith..	grav..	disk...	B-Lipe.	selec...	B-Lipe.	amid..	4	worm.	Timkn.	10.3	r-rd....	spgs...	Perf...	int-r-w.	int-r-w.	r....	Ross..	r....	.....	.....	Clydesdale.....90
10	Zenith..	grav..	disk...	B-Lipe.	selec...	B-Lipe.	amid..	4	worm.	Timkn.	13.66	r-rd....	spgs...	Perf...	int-r-w.	int-r-w.	r....	Ross..	r....	.....	.....	Clydesdale.....120
35	Zenith..	grav..	d-p...	Mech..	selec...	.....	mtr...	3	bevl..	Slsby...	6.0	spgs...	tor-a...	.....	int-r-w.	ext-r-w.	.....	own...	.....	fab....	Norwk.	Collier.....M

REVIATIONS—Makers of Parts

t Options
-Atwater-Kent
l—Auto-Lite
ek—Borg & Beck
pe—Brown-Lipe
—Berling
—Bremer
—Buda
—Candler
—Celfor
—Chicago
—Continental
—Connecticut
—Detroit

Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Salsby—Salisbury
S-A—Savage Arms
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sunderman
S-W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			ENGINE														
							Sizes in Ins.																	
				Make	Material	Type	Kind	Front	Rear	Wheels	Make	No. Cyl. Bore and Stroke—N.A.C.C., Hp.	Cylinders Cast	COOLING			IGNITION			ELEC. SYSTEM			GOVERNOR		
														Water Circ.	Radiator		Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make
															Make	Core and Case								
Columbia E-T	2	1,950	144	.....	rol-c	flex	s	36x4s	36x6s	wd	Bud*	4-4½x5½-27.2	4	cent	Long.	fin-cst	sing.	Eismn	hand.	ltg	Vesta	75	suct.	Mnrch
Commerce E	1	1,340	126	Dtrt	p-stl	flex	s	34x4s	34x4s	wd	Buff	4-3½x5 -19.6	4	ther	Long.	fin-cst	sing.	Remy	hand.	sl&i2	Remy	none	cent.	Pierce
Concord B	1	1,750	130	.....	p-stl	flex	opt	36x5s	36x5s	wd	Bud	4-3½x5½-19.6	4	ther	Bush.	fin-cst	sing.	Eismn	fix	s&l	West.	150	none	none
Concord A	2	2,400	145	.....	p-stl	s-flx	s	36x4s	36x4d	wd	Bud	4-4½x5½-28.9	4	cent	Bush.	fin-cst	sing.	Eismn	fix	s&l	West.	150	cent.	Pierce
Continental FL	1	1,750	144	.....	.....	.....	s	34x3	36x4	.....	.....	4-3½x5½-22.5	2	.....	.....	.....	sing.	Bsch*	fix	.....	.....	.....	suct.	.....
Continental HL	1½	2,100	144	.....	.....	.....	s	34x3½	36x5	.....	.....	4-3½x5½-22.5	2	.....	.....	.....	sing.	Bsch*	fix	.....	.....	.....	suct.	.....
Continental J	2	2,300	146	.....	.....	.....	s	36x4	36x4d	.....	.....	4-4½x5½-27.2	2	.....	.....	.....	sing.	Bsch*	fix	.....	.....	.....	suct.	.....
Continental M	3½	3,300	168*	.....	.....	.....	s	36x5	36x5d	.....	.....	4-4½x5½-32.4	2	.....	.....	.....	sing.	Bsch*	fix	.....	.....	.....	suct.	.....
Corbitt E	1	1,650	130	.....	p-stl	flex	opt	34x3½s	34x4s	wd	Con.	4-3½x5 -22.5	4	ther	Idl.	cel-sht	sing.	Eismn	hand.	sl&i2	Disco	100	cent.	Pierce
Corbitt D	1½	1,900	138	.....	p-stl	flex	opt	36x3½s	36x5s	wd	Con.	4-3½x5 -22.5	4	ther	Idl.	cel-sht	sing.	Eismn	hand.	sl&i2	Disco	100	cent.	Pierce
Corbitt C	2	2,650	148	.....	p-stl	flex	s	36x4s	36x7s	wd	Con.	4-4½x5½-27.2	4	cent	R-T	fin-cst	sing.	Eismn	hand.	none	none	.....	cent.	Pierce
Corbitt B	2½	2,900	148	.....	p-stl	flex	s	36x4s	36x7s	wd	Con.	4-4½x5½-27.2	4	cent	R-T	fin-cst	sing.	Eismn	hand.	none	none	.....	cent.	Pierce
Corbitt A	3½	3,800	168	.....	rol-c	rigid	s	36x5s	36x5d	wd	Con.	4-4½x5½-32.4	2	cent	R-T	fin-cst	sing.	Eismn	hand.	none	none	.....	cent.	Pierce
Corbitt AA	5	4,200	168	.....	rol-c	rigid	s	36x6s	40x6d	c-s	Con.	4-4½x6 -32.4	2	cent	R-T	fin-cst	sing.	Eismn	hand.	none	none	.....	cent.	Pierce
Corliss A	½	800*	100	.....	.....	.....	pnu	31x4	31x4	.....	.....	4-3½x4½-15.6	4	.....	.....	.....	sing.	Spltf	hand.	.....	.....	.....	.....	.....
Couple-Gear HC	3½	5,600	144*	own	.....	.....	s	36x4d	36x4d	.....	Wis.	4-5½x7 -53.0	1	ther	.....	.....	.....	Eismn	.....	ltg	.....	.....	.....	Wis
Couple-Gear AC	5	6,400	144*	own	.....	.....	s	36x5d	36x5d	.....	Wis.	4-5½x7 -53.0	1	ther	.....	.....	.....	Eismn	.....	ltg	.....	.....	cent.	Wis
Croce 17	½	825	108	.....	.....	.....	s*	32x4	32x4	.....	Wis.	4-3½x5 -16.9	4	.....	.....	.....	.....	Bosch	fix	.....	.....	.....	.....	.....
Dart E	1	1,800	130	Savg	.....	.....	s	34x3½	34x5	.....	Bud	4-3½x5½-22.5	4	.....	.....	.....	.....	Eismn	fix	.....	.....	.....	.....	.....
Dart C-C4	2	2,470	150	Savg	.....	.....	s	36x4	36x7	.....	Bud	4-4½x5½-28.9	4	.....	.....	.....	.....	Eismn	fix	.....	.....	.....	cent.	Simplex
Dart L	3½	3,400	160	Savg	.....	.....	s	36x5	36x10	.....	Bud	4-4½x6 -32.4	4	.....	.....	.....	.....	Eismn	hand	.....	.....	.....	cent.	Simplex
Dayton H	2	2,650	.....	.....	.....	.....	s	36x4	36x3½d	.....	Wis.	4-4½x5 -29.0	2	.....	.....	.....	.....	Bosch	hand	.....	.....	.....	.....	.....
Dayton	3½	3,400	.....	.....	.....	.....	s	36x5	36x4d	.....	Wis.	4-4½x6 -29.0	4	.....	.....	.....	.....	Bosch	hand	.....	.....	.....	.....	.....
Dayton K	3½	3,400	.....	.....	.....	.....	s	36x5	36x4d	.....	Wis.	4-4½x5½-36.1	2	.....	.....	.....	.....	Bosch	hand	.....	.....	.....	.....	.....
Dayton M	5	4,500	.....	.....	.....	.....	s	36x6	42x5d	.....	Wis.	4-5½x7 -44.2	2	.....	.....	.....	.....	Bosch	hand	.....	.....	.....	.....	.....
Dayton E	7½	4,950	.....	.....	.....	.....	s	36x7	42x6d	.....	Wis.	4-5½x7 -44.2	2	.....	.....	.....	.....	Bosch	hand	.....	.....	.....	.....	.....
D-E J	¾	950	108	Savg	p-stl	s-flx	pnu	33x4s	33x4s	wd	L-R	4-3½x4½-15.6	4	ther	Bush.	fin-sht	sing.	Brlng	hand	s&l	Al-Ch	none	none	none
D-E A	1½	1,495	128	Savg	p-stl	s-flx	s	34x3s	34x4s	wd	Con.	4-3½x5 -19.6	4	ther	Bush.	fin-cst	sing.	Brlng	fix	none	none	.....	.....	none
D-E B	2	1,755	144	Savg	p-stl	s-flx	s	34x3½s	34x5s	wd	Con.	4-3½x5 -22.5	4	ther	Bush.	fin-cst	sing.	Brlng	fix	none	none	.....	.....	none
D-E C	3	2,365	150	Savg	p-stl	s-flx	s	36x4s	36x7s	wd	Bud	4-4½x5½-28.9	4	ther	Bush.	fin-cst	sing.	Brlng	fix	none	none	.....	.....	none
DeKalb E	2	2,100	134	.....	p-stl	flex	s	34x3½s	36x5s	wd	Con.	4-4½x5½-27.2	4	cent	Bush.	cel-p-s	sing.	Eismn	hand	none	none	.....	cent.	Pierce
DeKalb E	2½	2,450	136	.....	p-stl	flex	s	36x4s	36x6s	wd	Con.	4-4½x5½-27.2	4	cent	Bush.	cel-p-s	sing.	Eismn	fix	none	none	.....	cent.	Pierce
Denby 12	1	1,490	124	.....	.....	.....	s	34x3	34x4	.....	Con.	4-3½x5 -19.6	4	.....	.....	.....	sing.	Eismn	fix	s&l	Bijur	.....	cent.	Mnrch
Denby 13	2	2,025	144	.....	.....	.....	s	36x3½	36x6	.....	Con.	4-3½x5 -22.5	4	.....	.....	.....	sing.	Eismn	fix	s&l	Bijur	.....	cent.	Mnrch
Denby 15	3	2,525	144	.....	.....	.....	s	36x4	36x4d	.....	Con.	4-3½x5 -22.5	4	.....	.....	.....	sing.	Eismn	fix	s&l	Bijur	.....	cent.	Mnrch
Denmo 12	¾	960	115	.....	.....	.....	pnu	32x4	32x4	.....	H-S	4-3½x5 -16.9	4	.....	.....	.....	sing.	Spltf	.....	s&l	Bijur	.....	.....	.....
Denmo 10	1½	1,490	124	.....	.....	.....	s*	34x4½	34x4	.....	.....	4-3½x5 -22.5	4	.....	.....	.....	sing.	Spltf	.....	stg	Spltf	.....	cent.	Pierce
Diamond-T J5	1	1,725	132	.....	.....	.....	s	36x3	36x4	.....	Con.	4-3½x5 -19.6	4	.....	.....	.....	sing.	Bosch	fix	.....	.....	.....	.....	.....
Diamond-T J4	1½	2,200	154*	.....	.....	.....	s	36x3½	36x5	.....	Con.	4-3½x5 -22.5	4	.....	.....	.....	sing.	Bosch	fix	.....	.....	.....	.....	.....
Diamond-T J3	2	2,475	154*	.....	.....	.....	s	36x4	36x6	.....	Con.	4-4½x5½-27.2	4	.....	.....	.....	sing.	Bosch	fix	.....	.....	.....	cent.	Pierce
Diamond-T L	3½	3,750	170*	.....	.....	.....	s	36x5	36x5d	.....	Con.	4-4½x5½-32.4	2	.....	.....	.....	sing.	Bosch	hand	.....	.....	.....	suct.	Mnrch
Diamond-T R	5	4,600	170*	.....	.....	.....	s	36x6	40x6d	.....	Con.	4-4½x5½-32.4	2	.....	.....	.....	sing.	Bosch	hand	.....	.....	.....	suct.	Mnrch
Dispatch	¾	1,100	120	own	.....	.....	pnu	34x4s	34x4s	wd	Wis.	4-3½x5 -22.5	4	ther	Amer	cel-sht	sing.	Delco	hand	sl&i	USL	none	none	none
Doane	2½	3,000	150	.....	.....	.....	s	36x4	36x7	.....	.....	4-4½x5½-29.0	2	.....	.....	.....	sing.	Bosch	auto	.....	.....	.....	.....	Wau
Doane 6	6	4,750	178	.....	.....	.....	s	36x6	38x6d	.....	.....	4-4½x6½-36.1	2	.....	.....	.....	sing.	Bosch	auto	.....	.....	.....	cent.	Wau
Dorris I-B-W	2	2,285	144	.....	.....	.....	s	36x4	36x4d	.....	own	4-4½x5 -30.7	2	.....	.....	.....	sing.	Bosch	hand	.....	.....	.....	cent.	Pierce
Duplex D	3½	3,600	130*	.....	.....	.....	s	36x6	36x6	.....	Bud	4-4½x5½-29.0	4	.....	.....	.....	sing.	Eism*	hand	s&l	.....	.....	.....	.....
Ellsworth 25A	½	.....	108	p&b	p-stl	flex	pnu	30x3½s	30x3½s	wd	Lyc	4-3½x5 -16.9	4	ther	Can.	cel	sing.	hand	sli2	.....	.....	.....	none	none
Fageol	2	2,750	144	.....	rol-c	.....	s	34x4s	36x7s	wd*	Wau	4-4 x5½-25.6	2	cent	Per	cel-cst	sing.	Eismn	fix	.....	.....	.....	cent.	Wau
Fargo P	2	2,200	146	own	rol-c	s-flx	s	36x4s	36x6s	wd	own	4-3½x5 -22.5	4	ther	own.	fin-cst	sing.	Dixie	hand	sli2	West.	150	suct.	Mnrch
Federal S	1	1,750	132	own	.....	.....	s	34x3	34x4	.....	own	4-3½x5½-19.6	4	.....	.....	.....	sing.	Eismn	fix	s&l	.....	.....	cent.	Simplex
Federal T	1½	2,200	144	own	.....	.....	s	36x3½	36x5	.....	own	4-3½x5½-22.5	4	.....	.....	.....	sing.	Eismn	fix	s&l	Wstg	.....	cent.	Simplex
Federal U	2	2,450	144	own	.....	.....	s	36x4	36x7*	.....	own	4-4½x5½-22.5	4	.....	.....	.....	sing.	Eismn	fix	s&l	Wstg	.....	cent.	own
Federal W	3½	3,150	156	own	.....	.....	s	36x5	36x5d	.....	own	4-4½x5½-29.0	4	.....	.....	.....	sing.	Eismn	fix	ltg	Wstg	.....	cent.	own
Federal X	5	4,200	156	own	.....	.....	s	36x6	40x6d*	.....	own	4-4½x5½-29.0	4	.....	.....	.....	sing.	Eismn	fix	s&l	.....	.....	cent.	Simplex
Forschler AO	1	1,815	138	.....	rol-c	flex	s	34x3s	34x4s	wd	Con.	4-3½x5 -19.6	4	cent	E-M	sq-t-sht	sing.	Bosch	fix	.....	.....	.....	cent.	Mnrch
Forschler BO	2	2,475	138	.....	rol-c	flex	s	34x4s	34x6s	wd	Con.	4-4½x5½-27.2	4	cent	E-M	sq-t-sht	sing.	Bosch	fix	.....	.....	.....	cent.	Mnrch
Ford 1	1	600	123	.....	p-stl	.....	s	30x3s	32x3s	wd	own	4-3½x4 -22.5	4	ther	own.	fin-s-s	sing.	own	hand	ltg	own	.....	none	none
F. W. D B	3	4,000	124	Prsh	.....	.....	s	36x6	36x6	.....	Wis.	4-4½x5½-36.1	2	ther	.....	.....	sing.	Eismn	hand	s&l	N-E	.....	.....	Pierce
Fulton F-2	1½	1,420	136	.....	p-stl	s-flx	s	34x3½s	34x5s	wd	own	4-3½x5 -19.6	4	ther	own.	sq-t-c-i	sing.	Spltf	hand	opt	.....	.....	suct.	Mnrch
Garford 75B	1	1,750	128	own	.....	.....	s*	34x4½	36x4	.....	Bud	4-3½x5½-19.6	4	ther	.....	.....	sing.	Spltf	hand	s&l	Wstg	.....	suct.	Mnrch
Garford 66B	1½	2,100	142*	own	.....	.....	s	36x3½	36x5	.....	Bud	4-3½x5½-22.5	4	pump	.....	.....	sing.	Spltf	hand	s&l	Westg	.....	suct.	Mnrch
Garford 70B	2	2,600	142*	own	.....	.....	s	36x4	36x4d	.....	Bud	4-4½x5½-29.0	4	pump	.....	.....	sing.	Bosch	hand	s&l	Wstg	.....	suct.	Mnrch
Garford 77B	3½	3,700	128*	own	.....	.....	s	36x5	40x5d	.....	Wis.	4-4½x6 -28.0	4	pump	.....	.....	sing.	Bosch	hand	s&l	Wstg	.....	cent.	own
Garford 68	5	4,500	128*	own	.....	.....	s	36x6	40x6d	.....	Wis.	4-4½x5½-36.1	2	pump	.....	.....	sing.	Bosch	hand	.....	Wstg	.....	suct.	own
Garford 69	6	4,700	128*	own	.....	.....	s	36x6	40x7d	.....	Wis.	4-5½₀x5½-41.6	2	pump	.....	.....	sing.	Bosch	hand	.....	Wstg	.....	suct.	own
Garford Tractor	4½	2,700	116	own	.....	.....	.....	36x4	36x4d	.....	Bud	4-4½x5½-29.0	4	pump	.....	.....	sing.	Bosch	hand	.....	Wstg	.....	.....	Mnrch
Garford Tractor	7½	3,800	105	own	.....	.....	.....	36x5	40x5d	.....	Wis.	4-4½x5½-36.1	2	pump	.....	.....	sing.	Bosch	hand	.....	Wstg	.....	.....	own
Garford Tractor	10	4,600	102	own	.....	.....	.....	36x6	40x6d	.....	Wis.	4-4½₀x5½-41.5	2	pump	.....	.....	sing.	Bosch	hand	.....	Wstg	.....	.....	own
Gary F	1	.....	130	P&B	p-stl	flex	s	36x3½s	36x4s	wd	Bud*	4-3½x5½-22.5	4	ther	Chgo	zz-t-ps	sing.	Eismn	fix	opt	Vesta	.....	suct.	Mnrch
Gary G	1½	.....	144	P&B	p-stl	flex	s	36x3½s	36x5s	wd	Bud	4-4½x5½-28.9	4	cent	Chgo	zz-t-ps	sing.	Eismn	fix	opt	Vesta	.....	cent.	Simplex

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
flx—fixed
flex—flexible
fric—friction
grav—gravity
gset—gearset
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
mtl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Continued

ENGINE				TRANSMISSION											BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE							STEERING GEAR					
Make	Truck in M.p.h.	Carbureter Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Springs Make	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
	14½	Shkspr.	grav.	cone.	Hart	selec.	Covert.	amid.	3	in-g.	Russl.	9.4	spgs.	spgs.	Perf.	int-r-w	ext-r-w.	l.	own.	c.	Metl.	Spicer.	Columbia E-T
	20	Zenith.	vacm.	cone.	Dtrt.	selec.	Dtrt.	mtr.	3	in-g.	Torb.	7.0	spgs.	spgs.	Dtrt.	int-r-w.	ext-r-w.	l.	Hays.	c.	Metl.	Spicer.	Commerce E
		Zenith.	grav.	d-d.	Warner	selec.	Warner	mtr.	3	worm	Timkn.	7.0	spgs.	spgs.	A-D.	int-r-w.	int-r-w.	l.	Wrnr.	c.			Concord B
			grav.	d-d.	Warner	selec.	Warner	mtr.	3	worm	Timkn.	8.5	spgs.	spgs.	A-D.	int-r-w.	int-r-w.	l.	Ross.	c.			Concord A
		Stmbg.		d-d.		selec.		mtr.	3	worm		7.7	spgs.	spgs.									Continental FL
		Stmbg.		d-d.		selec.		mtr.	3	worm		9.2	spgs.	spgs.									Continental HL
		Stmbg.		d-d.		selec.		mtr.	3	worm		9.2	spgs.	spgs.									Continental J
	18	Stmbg.		d-d.		selec.		mtr.	3	worm		10.5	spgs.	spgs.				c.					Continental M
	18	Stmbg.	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	6.5	spgs.	spgs.	Shel.	int-r-w	int-r-w.	l.	Lavn.	c.			Corbitt E
	16	Stmbg.	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	7.5	spgs.	spgs.	Shel.	ext-r-w.	int-r-w.	l.	Ross.	c.			Corbitt D
	14	Stmbg.	vacm.	d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	worm	Shel.	8.66	spgs.	spgs.	Shel.	int-r-w	int-r-w.	l.	Ross.	c.			Corbitt C
	14	Stmbg.	vacm.	d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	4	worm	Shel.	8.66	spgs.	spgs.	Shel.	int-r-w	int-r-w.	l.	Ross.	c.			Corbitt B
	12	Stmbg.		m-d.	H-Shaw	mesh.	Cotta.	amid.	3	worm	Shel.	8.75	spgs.	spgs.	Shel.	int-r-w	int-r-w.	l.	Ross.	c.			Corbitt A
	10	Stmbg.	vacm.	m-d.	H-Shaw	mesh.	Cotta.	amid.	3	worm	Shel.	8.75	r-rd.	tor-a.	Shel.	int-r-w	int-r-w.	l.	Ross.	c.			Corbitt AA
		Schblr.	grav.	d-d.				mtr.	3	bevl.		4.5	tor-t.	tor-t.		int-r-w	int-r-w.						Corliss A
	10	Stmbg.	grav.			selec.			1	bevl.	own.	25.0	r-rd.	r-rd.			ext-4-w.		own.				Couple-Gear HC
	10	Stmbg.	grav.			selec.		amid.	1	bevl.	own.	25.0	r-rd.	r-rd.			ext-4-w.		own.				Couple-Gear AC
	17½	Zenith.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	bevl.	Timkn.	5.0	spgs.	spgs.		int-.	ext-r-w.		Lavn.				Croce 17
		Master.		d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Timkn.	7.0	spgs.	spgs.		int-r-w	int-r-w.		Ross.		Metl.	Arvac.	Dart E
	14	Master.	grav.	d-d.	Muncie	selec.	Muncie	mtr.	4	worm	Timkn.	9.2	spgs.	spgs.		int-r-w	int-r-w.		Ross.		Metl.	Arvac.	Dart C-C4
	11	Master.	grav.	d-d.	Warner	selec.	Warner	amid.	4	worm	Timkn.	10.7	spgs.	spgs.		int-r-w	int-r-w.		Ross.		Metl.	Arvac.	Dart L
		Stmbg.	grav.		M-Evn.	selec.	own.	jst.	3	chn.	Timkn.		r-rd.			int-r-w	ext-j-s.		Ross.				Dayton H
		Stmbg.	grav.	d-p.	B-Beck.	selec.	own.	amid.	3	worm	TDB.		r-rd.	tor-a.		int-r-w	int-r-w.		Ross.				Dayton
		Stmbg.	grav.	m-d.	M-Evn.	selec.	own.	jst.	3	chn.	Timkn.		r-rd.			int-r-w	ext-j-s.		Ross.				Dayton K
		Stmbg.	grav.	m-d.	M-Evn.	selec.	own.	jst.	3	chn.	Timkn.		r-rd.			int-r-w	ext-j-s.		Ross.				Dayton M
		Stmbg.	grav.	m-d.	M-Evn.	selec.	own.	jst.	3	chn.	Timkn.		r-rd.			int-r-w	ext-j-s.		Ross.				Dayton E
		Schblr.	grav.	d-d.	Dtrt.	selec.	Dtrt.	mtr.	3	worm	Shel.	6.2	spgs.	spgs.	Iron.	int-r-w	int-r-w.	l.	Gem.	c.		Hart.	D-E J
	16	Zenith.	grav.	d-p.	B-Beck.	selec.	Covert.	mtr.	3	worm	Hays.	7.75	spgs.	spgs.	Iron.	int-r-w	ext-r-w.	l.	Ross.	c.		Hart.	D-E A
	15	Zenith.	grav.	d-p.	B-Beck.	selec.	Covert.	mtr.	3	worm	Hays.	8.33	spgs.	spgs.	Iron.	int-r-w	ext-r-w.	l.	Ross.	c.		Hart.	D-E B
	14	Zenith.	grav.	d-p.	B-Beck.	selec.	Covert.	mtr.	3	worm	Hays.	8.66	spgs.	spgs.	Iron.	int-r-w	int-r-w.	l.	Ross.	c.		Hart.	D-E C
	15	Master.	grav.	cone.	Fuller.	selec.	Fuller.	mtr.	3	worm	Timkn.	8.5	r-rd.	tor-a.	Mthr.	int-r-w	int-r-w.	l.	Ross.	c.		K-B.	DeKalb E
	13	Master.	grav.	cone.	Fuller.	selec.	Fuller.	mtr.	3	worm	Timkn.	10.33	r-rd.	tor-a.	Mthr.	int-r-w	int-r-w.	l.	Ross.	c.		K-B.	DeKalb E
		Zenith.		d-d.		selec.		mtr.	3	in-g.	Russl.	8.2	spgs.	spgs.		int-r-w	int-r-w.						Denby 12
		Zenith.		d-d.		selec.		mtr.	3	in-g.	Russl.	9.8	spgs.	spgs.		int-r-w	ext-r-w.						Denby 13
		Zenith.		d-d.		selec.		mtr.	3	in-g.	Russl.	10.9	spgs.	spgs.		int-r-w	ext-r-w.						Denby 15
	20	Carter.		d-p.	B-Beck.	selec.	G-Lees.	mtr.	3	in-g.	Torb.		spgs.	spgs.		int-r-w	ext-r-w.		Dit.				Denmo 12
		Stewrt.		d-p.		selec.		mtr.	3	in-g.			spgs.	spgs.		ext-r-w	int-r-w.						Denmo 10
	18	Rayfld.		d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	worm	Timkn.	7.7	spgs.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Diamond-T J5
	16	Rayfld.		d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	worm	Timkn.	7.7	spgs.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Diamond-T J4
	15	Rayfld.		d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	worm	Timkn.	7.7	spgs.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Diamond-T J3
	12	Rayfld.		d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	4	worm	Timkn.	6.8	spgs.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Diamond-T L
		Rayfld.		d-d.	B-Lipe.	selec.	B-Lipe.	amid.	4	worm	Timkn.	13.6	spgs.	spgs.		int-.	int-.		Gem.		Metl.	Spicer.	Diamond-T R
	30	Rayfld.	vacm.		own.		own.		3	chn.	own.	4.0	r-rd.		Tut.	int-r-w	int-r-w.	l.	Fost.	c.	Metl.	Blood.	Dispatch
	14	Holley.		d-d.		selec.		mtr.	3	chn.		8.0	r-rd.			int-.	ext-.						Doane
	10	Holley.		d-d.		selec.		mtr.	3	chn.		10.5	r-rd.			int-.	ext-.						Doane
	15	Stmbg.		d-d.	own.	selec.	own.	mtr.	3	worm	Timkn.	7.8	spgs.	spgs.		int-r-w	int-r-w.		Gem.				Dorris I-B-W
	12	Schblr.		p.	B-Lipe.	id-c.	Muncie	mtr.	6	in-g.	own.	16.0	r-rd.	tor-a.		ext-sht.	ext-sht.		Lavn.				Duplex D
		Carter.	grav.	cone*	Mech.	prog.	Mech.	mtr.	3	bevl.	Gemco.		spgs.	spgs.	Shel.	int-r-w	int-r-w.	l.	Fost.	c.		own.	Ellsworth 25A
	15	Zenith.	grav.	d-p.	B-Beck.	mesh.	Cotta.	mtr.	3	worm	Timkn.	7.7	spgs.	spgs.	Mthr.	int-r-w.	int-.	l.	Ross.	c.			Fageol
	15	Zenith.	grav.	d-p.	B-Beck.	selec.	G-L.		3	in-g.	Russl.	9.5	spgs.	spgs.	Russl.	int-r-w	ext-r-w.	l.	Jacx.	c.	Metl.	Spicer.	Fargo P
	18	Zenith.		d-p.	B-Beck.	selec.	own.		3	worm	Timkn.	7.0	r-rd.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Federal S
	15	Zenith.		dry-p.	B-Beck	selec.		amid.	4	worm	Timkn.	9.25	r-rd.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Federal T
	13	Zenith.		dry-p.	B-Beck	selec.		amid.	4	worm	Timkn.	8.5	r-rd.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Federal U
	12	Stmbg.		dry-p.	B-Beck	selec.	Warner	amid.	4	worm	Timkn.	10.3	r-rd.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Federal W
	10	Zenith.		d-p.	B-Beck.	selec.	Warner	amid.	4	worm	Timkn.	11.6	r-rd.	spgs.		int-r-w	int-r-w.		Gem.		Metl.	Spicer.	Federal X
	15	Zenith.	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	7.7	spgs.	spgs.	Del.	int-r-w	int-r-w.	l.	Ross.	c.			Forschler AO
	12	Zenith.	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	8.7	spgs.	spgs.	Del.	int-r-w	int-r-w.	l.	Ross.	c.			Forschler. BO
		Holley.	grav.	d-d.	own.	plan.	own.	mtr.	2	worm	own.	7.2	r-rd.	tor-t.	own.	int-r-w	ext-d-s.	l.	own.	c.			Ford
	14	Stmbg.		d.	M-Evn.	id-c.	Cotta.	amid.	3	bevl.	own.	8.9	spgs.	tor-a.		ext-r-w.	ext-sht.		Ross.		Metl.	Blood.	F. W. D B
	16	Sundm.	grav.	cone.	own.	selec.	own.	amid.	3	in-g.	Russl.	8.2	spgs.	spgs.	Perf.	int-r-w	ext-r-w.	l.	Levn.	c.			Fulton F-2
	17	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	mtr.	3	worm		7.8	spgs.	spgs.		int-r-w	int-r-v		Ross.		Metl.	Spicer.	Garford 75B
	14	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	amid.	3	worm		8.5	spgs.	spgs.		int-r-w	ext-r-w.		Ross.		Metl.	Spicer.	Garford 66B
	13	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	amid.	3	worm		7.7	spgs.	spgs.		int-r-w	ext-r-w.		Ross.		Metl.	Spicer.	Garford 70B
	12	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	amid.	4	worm		10.3	r-rd.	spgs.		ext-d-s	int-r-w		Ross.		Metl.	Spicer.	Garford 77B
	9	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	jst.	4	chn.		13.3	r-rd.			int-r-w	ext-d-s		Ross.		Metl.	Spicer.	Garford 68
	8	Rayfld.	grav.	d-d.	B-Lipe.	selec.	B-Lipe.	jst.	4	chn.		13.3	r-rd.			int-r-w	int-d-s.		Ross.		Metl.	Spicer.	Garford 69
		Rayfld.	grav.	d-d.		selec.		amid.	3	worm	Timkn.	7.5											Garford Tractor
		Rayfld.	grav.	d-d.		selec.		amid.	4	worm	Timkn.	7.5											Garford Tractor
		Rayfld.	grav.	d-d.		selec.		amid.	4	chn.	own.	7.5											Garford Tractor
	15	Stmbg*	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	7.8	spgs.	spgs.	Tut.	int-r-w	int-r-w.	l.	Lavn.	c.	Metl.	Blood.	Gary F
	15	Stmbg*	grav.	d-d.	Fuller.	selec.	Fuller.	mtr.	3	worm	Shel.	7.75	spgs.	spgs.	Tut.	int-r-w	int-r-w.	l.	Lavn.	c.	Metl.	Blood.	Gary G

ABBREVIATIONS—Makers of Parts

Other Options
A—Atwater-Kent
t-L—Auto-Lite
Beck—Borg & Beck
Lipe—Brown-Lipe
g—Berling
n—Bremer
m—Bremer
d—Buda
n—Candler
fr—Celfor
go—Chicago
n—Continental
nn—Connecticut
rt—Detroit

Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnsn—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Savg—Savage Arms
Salsby—Salisbury
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sunderman
S-W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasolin

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE																
								Size in Ins.																			
				Make	Material	Type	Kind	Front	Rear		Make	No. Cyl. Bore and Stroke—N.A.C.C., Hp.	Cylinders Cast	COOLING			IGNITION			ELEC. SYSTEM			GOVERN				
														Water Circ.	Radiator		Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make			
															Make	Core and Case											
Gary H	2		156	P&B	p-stl	flex	s	36x4s	36x6s	wd	Bud	4-4¼x5½-28.9	4	cent	Chgo	zz-t-sh	sing	Eismn	fix	opt	Vesta		cent	Simplex			
Gary HU	3		162	P&B	p-stl	flex	s	36x4s	36x7s	wd	Bud	4-4¼x5½-28.9	4	cent	Perf		sing	Eismn	auto	opt	Vesta		cent	Simplex	1,275		
Gary K	4		162	own	rol-c	s-flx	s	36x5s	36x5d	wd	Bud	4-4½x6 -32.4	4	cent	Perf	-cst	sing	Eismn	auto	opt	Vesta		cent	Duplex	1,275		
G. A. Schacht	2	2,750	138	own	rol-c	flex	s	36x3½s	36x6s	wd	Bud	4-4¼x5½-28.9	4	cent	own	cel-p-s	sing	Bosch	hand	none	none		cent	own	1,200		
G. A. Schacht	2½	3,000	156	own	rol-c	flex	s	36x4s	36x4d	wd	Bud	4-4¼x5½-28.9	4	cent	own	zz-t-ci	sing	Bosch	hand	none	none		cent	own	900		
G. A. Schacht	3½	3,400	168	own	rol-c	flex	s	36x5s	36x5d	wd	Bud	4-4¼x5½-28.9	4	cent	own	zz-t-ci	sing	Bosch	hand	none	none		cent	own	900		
G. A. Schacht	5	4,400	168	own	rol-c	flex	s	36x5s	40x6d	wd	Bud	4-4¼x5½-28.9	4	cent	own	zz-t-ci	sing	Bosch	hand	none	none		l-b	Dulpex	900		
Gem	¾	675					pnu	31x4	31x4		GBS	4-3¾x4½-22.5	4	ther			sing	Conn	hand	s&l	Dynto				1,000		
Geneva			96				s	34x2	36x2½			2-5½x4½-22.1	1				sing	Simms	fix								
Gersix C	2½	2,500	150*				s	36x4	36x7		Wis	6-3½x5½-33.8	6				sing	West	hand	s&l	West		suct	Mnrch			
Globe A1	1	1,375	132	own	rol-c	flex	s	34x3½s	34x4s	wd	Con	4-3½x5 -19.6	4	cent	Perf		sing	Eismn	fix	none	none		cent	Pierce	1,050		
G.M.C. 16	¾	1,395	132		p-stl	s-flx	pnu	35x5s	35x5s	wd	Con	4-3½x5 -22.5	4	cent	McC	fin-sht	sing	Eismn	hand	opt	opt		suct	Mnrch	1,383		
G.M.C. 21	1	1,950	136		p-stl	s-flx	opt	34x3½s	34x5s	wd	Con	4-3½x5 -22.5	4	cent	McC	fin-cst	sing	Eismn	hand	opt	opt		suct	Mnrch	1,150		
G.M.C. 31	1½	2,350	144		p-stl	s-flx	s	36x3½s	36x5s	wd	Con	4-3½x5 -22.5	4	cent	McC	fin-cst	sing	Eismn	hand	opt	opt		suct	Mnrch	1,380		
G.M.C. 41	2	2,690	158		p-stl	s-flx	s	36x4s	36x4d	wd	Con	4-4¼x5½-27.2	4	cent	McC	fin-cst	sing	Eismn	hand	opt	opt		suct	Mnrch	1,300		
G.M.C. 71A	3½	3,750	163	own	rol-c	s-flx	s	36x5s	40x5d	wd	Con	4-4½x5½-32.4	2	cent	McC	fin-cst	sing	Eismn	hand				suct	Mnrch	1,210		
G.M.C. 101A	5	4,350	163	own	rol-c	s-flx	s	36x6s	40x6d	wd	Con	4-4½x5½-32.4	2	cent	McC	fin-cst	sing	Eismn	hand	ltg	Vesta		suct	Mnrch	1,210		
Gramm-Bernstein W	1	1,900	124		p-stl	s-flx	s	34x3½s	34x4s	wd	Wau	4-3½x5½-22.5	4	cent	own	fin-cst	sing	Eismn	hand	none	none		cent	Wau	1,150		
Gramm-Bernstein W	1½	2,300	130		p-stl	s-flx	s	34x3½s	36x5s	wd	Wau	4-3½x5½-22.5	4	cent	own	fin-cst	sing	Eismn	hand	none	none		cent	Wau	1,300		
Gramm-Bernstein W	2	2,600	146		p-stl	s-flx	s	34x4s	34x3½s	wd	Wau	4-3½x5½-22.5	4	cent	own	fin-cst	sing	Eismn	hand	none	none		cent	Wau	1,200		
Gramm-Bernstein W	2½	3,150	156		p-stl	s-flx	s	36x4s	36x4d	wd	Wau	4-4¼x5½-28.9	2	cent	own	fin-cst	dual	Eismn	hand	opt2	West	200	cent	Wau	1,200		
Gramm-Bernstein W	3½	3,800	158		p-stl	s-flx	s	36x5s	40x5d	wd	Wau	4-4½x5½-32.4	2	cent	own	fin-cst	dual	Eismn	hand	opt2	West	200	cent	Wau	1,150		
Gramm-Bernstein W	5	4,700	168		p-stl	s-flx	s	36x6s	40x6d	c-s	Wau	4-4½x6½-36.1	2	cent	own	fin-cst	dual	Eismn	hand	opt2	West	200	cent	Wau	1,100		
G.V.-Mercedes FV	6		192½				s	34x5	40x6d		own	4-4¼x5½0-29.0	2	pump			sing	Bosch	fix				cent	own	1,050		
																									850		
Hahn	¾	1,100	120*	Prsh			s	36x3	36x3½		Con	4-3½x5 -14.4	4	pump			sing	Eismn	hand				cent	Pierce			
Hahn	1½	1,950	144*	Prsh			s	36x3½	36x3½d		Con	4-4¼x5½-27.2						Bosch	hand				cent	Pierce	1,175		
Hahn	3½	2,900	148*	Prsh			s	36x5	36x5d		Con	4-4½x5½-32.4													980		
Hall	2	2,350	144	own	rol-c		s	36x4s	36x4d		Con	4-4¼x5½-27.2	4	pump	Long	fin-cst	sing	Bsch*	fix	ltg	Bosch		suct	Mnrch			
Hall	3½	3,250	144	own	rol-c		s	36x5s	36x5d		Con	4-4½x5½-32.4	2	pump	Long	fin-cst	sing	Bsch*	fix	ltg	Bosch		suct	Mnrch			
Hall	5	4,200	144	own	rol-c		s	36x5s	36x5d		Con	4-4½x5½-32.4	2	pump	Long	fin-cst	sing	Bsch*	fix	opt			suct	Mnrch			
Hall	5		144	own	rol-c	s-flx	s	36x5s	40x6d		Con	4-		pump	Long	fin-cst				opt				Mnrch			
Harrison C	3½						s	37x5	36x7		Con	4-4½x5 -32.4					hand	Bosch					cent	own			
Harrison F	3½						s	37x5	37x5d		Con	4-4½x5 -32.4					hand	Bosch					cent	own	1,025		
Harvey WFA	2½	2,500	150	own	rol-c	rigid	s	36x4s	36x7s	wd	Bud	4-4¼x5½-29.0	4	cent	Chgo	fin-cst	sing	Eismn	auto	sl&i	West	175	cent	Duplex	1,000		
Harvey WHA	3½	3,250	160	own	rol-c	rigid	s	36x5s	36x5d	wd	Bud	4-4½x6 -32.4	4	gear	Chgo	fin-cst	sing	Eismn	auto	sl&i	West	175		Duplex	1,000		
Harvey WKA	5	4,000	160	own	rol-c	rigid	s	36x6s	40x6d	wd	Bud	4-4½x6 -32.4	4	gear	Chgo	fin-cst	sing	Eismn	auto	sl&i	West	175	cent	Duplex	1,000		
Harvey Tractor HT	7	4,000	125	own	rol-c	rigid	s	36x5s	36x5d	wd	Bud	4-4½x6 -32.4	4	cent	Chgo	fin-cst	sing	Eismn	auto	sl&i	West	175		Duplex	1,000		
Hawkeye J	1½	1,750	146	own	rol-c	s-flx	s	34x3½s	34x5s	wd	Bud	4-3½x5½-22.5	4	ther	own		sing	Eismn	hand	sl&i2	West	175	cent	Duplex	1,000		
Hendrickson G	2				rol-c		s	36x4s	36x4d	wd	Wau	4-4¼x5½-28.9	2	cent	Chgo	fin-cst	sing	Dixie	hand				suct	Wau			
Hendrickson H	3½	3,000			rol-c		s	36x5s	36x5d	wd	Wau	4-4½x5½-32.4	2	cent	Chgo	fin-cst	sing	Dixie	hand	ltg2		22	cent	Wau	1,000		
Highway Tractor A	5		93		rol-c	rigid	s	34x8s	36x4s	wd	Wei	4-3½x5½-22.5	4	cent	Can	zz-t-ps	sing	Eismn	hand	opt	opt				1,100		
Higrade A17	¾		115		p-stl	flex	pnu	34x4½s	34x4½s	wd	Wis	4-3½x5 -16.9	4	ther		zz-t-ca	sing	Simms	hand	s&l2	L-N			Simplex			
Hoover 15B	1	1,375	120		p-stl	rigid	pnu	32x4s	33x4½s	wd	Con	4-3½x5 -19.6	4	ther	Can	sq-t-sht	dual	Dixie	hand	none	none		none	none	1,000		
Horner	1½	2,600	145		rol-c	rigid	s	36x4s	36x4s	wd	Con	4-4½x5½-27.2	4	cent	own	fin-p-st	dual	Bosch	hand	ltg	Vesta		cent	Mnrch			
Horner	2	2,750	145		rol-c	rigid	s	36x4s	36x3½d	wd	Con	4-3½x5½-15.6	4	cent	own	fin-p-st	dual	Bosch	hand	ltg	Vesta		cent	Mnrch			
Horner	3	3,550	145		rol-i	rigid	s	36x5s	40x5d	wd	Con	4-4½x5½-32.4	2	cent	own	fin-p-st	dual	Bosch	hand	ltg	Vesta		suct	Mnrch			
Horner	5	4,750	156		rol-i	rigid	s	38x5s	40x6d	wd	Con	4-	2	cent	own	fin-p-st	dual	Bosch	hand	ltg	Vesta		suct	Mnrch			
Hurlburt 1	1½	2,350	136		p-stl	rigid	s	34x4s	34x5s	wd	Bud	4-3½x5½-22.5	4	cent	own	cel-sht	sing	Dixie	hand	ltg	Vesta	none	cent				
Hurlburt 2	2	3,300	148		p-stl	rigid	s	36x4s	36x4d	wd	Bud	4-4¼x5½-28.9	4	cent	own	fin-t-ci	dual	Dixie	hand	ltg	Vesta	none	cent		1,375		
Hurlburt 3	3½	3,850	146		p-stl	rigid	s	36x5s	36x5d	wd	Bud	4-4½x6 -32.4	4	cent	own	fin-cst	dual	Dixie	hand	ltg	Vesta	none	cent		1,300		
Hurlburt 5	5	4,600	156		p-stl	rigid	s	36x5s	40x6d	wd	Bud	6-3½x5½-33.7	4	cent	own	fin-cst	dual	Dixie	hand	ltg	Vesta	none	cent		1,050		
Hurlburt 7	7	5,500	156		p-stl	rigid	s	36x6s	40x7d	wd	Bud	6-3½x5½-33.7	4	cent	own	fin-cst	sing	Dixie	hand	ltg	Vesta	none	cent		1,360		
																									1,360		
I.H.C. H	¾	1,450	115	P&B	p-stl	s-flx	s*	36x3½s	36x4s	wd	own	4-3½x5½-19.6	4	cent	M'C*	fin-p-s	sing	Dixie	hand	s&l	N-E	125	cent	own			
I.H.C. F	1	1,750	128	P&B	p-stl	s-flx	s*	36x3½s	36x4s	wd	own	4-3½x5½-19.6	4	cent	M'C*	fin-p-s	sing	Bosch*	hand	s&l	N-E	125	cent	own	1,275		
I.H.C. G	2	2,500	135½	P&B	p-stl	s-flx	s*	36x3½s	36x6s	wd	own	4-4 x5 -25.6	4	ther	M'C*	fin-cst	sing	Bosch*	hand	s&l	N-E	125	cent	own	1,275		
Independent F	1	1,385	128*				s	36x3*	36x4*		Con	4-3½x5 -19.6	4					Eismn	fix	s&l	Jesco		suct	Mnrch	1,100		
Independent G	2	1,850	144				s	36x3½	36x5		Con	4-4¼x5½-27.2	4				sing	Eismn	fix				suct	Mnrch			
Indiana T	1	1,600	135	own	rol-c	s-flx	s	34x3½s	34x4s	wd	Wau	4-3½x5½-19.6	4	cent	Long	fin-cst	sing	Eismn	hand				cent	Wau	1,350		
Indiana D	2	2,350	150	own	rol-c	s-flx	s	36x4s	36x7s	wd	Rut	4-4¼x5½-27.2	2	cent	Long	fin-cst	sing	Bosch	hand				cent	Pierce			
Indiana R	3½	3,000	156	own	rol-c	s-flx	s	36x5s	36x5d	wd	Wau	4-4¼x5½-28.9	2	cent	Lnog	fin-cst	sing	Bosch	hand				cent	Wau	1,080		
Indiana L	5	4,000	168	own	rol-c	s-flx	s	36x5s	40x6d	c-s	Wau	4-4¼x6½-36.1	2	cent	Long	sq-t-ci	dual	Bosch	hand				cent	Wau	1,375		
																									1,150		
Kearns D	½	850c	107	p-stl			pnu	30x3½s	30x3½s	wd	Lyc	4-3½x5 -16.9	4	ther	Bush	p-p-stl	sing	Conn	hand	sl&i2	Dyn			none	800		
Kelly-Springfield K31	1½	2,500	144*				s*	36x3½*	36x6*		own	4-3½x5½-22.5	4	pump			sing	Eismn	auto	s&l	R&M		cent	own			
Kelly-Springfield K32	1½	2,500	144*				s*	36x3½*	36x6*		own	4-3½x5½-22.5	4	pump			sing	Eismn	auto	s&l	R&M		cent	own			
Kelly-Springfield K36	2½	3,000	144*				s*	36x4*	36x4d*		own	4-3½x5½-22.5	4	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,200		
Kelly-Springfield K35	2½	3,000	144*				s*	36x4*	36x4d*		own	4-3½x5½-22.5	4	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,200		
Kelly-Springfield K40	3½	3,850	150*				s*	38x5*	38x5d*		own	4-4½x6½-32.4	3	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,200		
Kelly-Springfield K45	4	4,000	150*				s*	38x5*	40x6d*		own	4-4½x6½-32.4	2	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,200		
Kelly-Springfield K50	5	4,600	150*				s*	38x6*	40x6d*		own	4-4½x6½-32.4	2	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,100		
Kelly-Springfield K60	6	4,750	150*				s*	38x6*	40x7d*		own	4-4½x6½-32.4	2	pump			sing	Eismn	auto	s&l	R&M		cent	own	1,100		
King	3½	2,800	120	own	rol-c	flex	s	36x5s	36x5d	wd	Con	4-4½x5½-32.4	2	cent	Liv	z-z-t-s	Dual	Bosch	2-pt	none	none		cent	Pierce	1,100		
																									1,000		

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 8 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
fix—fixed
flex—flexible
fric—friction
grav—gravity
gset—gearset
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Continued

ENGINE				TRANSMISSION											BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE							STEERING GEAR					
Motor in R.p.m.	Truck in M.p.h.	Carbureter Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Springs, Make	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
1,275	15	Stmbg*	grav.	d-d	Fuller	selec	Fuller	mtr	3	worm	Shel	8.75	spgs	spgs	Tut	int-r-w	int-r-w	l	Lavn	c	metl	Blood	Gary H
1,275	15	Stmbg*	grav.	d-d	Fuller	selec	Fuller	mtr	3	worm	Shel	8.75	spgs	spgs	Tut	int-r-w	int-r-w	l	Lavn	c	metl	Blood	Gary HU
1,200	12	Stmbg	grav.	d-d	Warner	selec	Warner	amid	4	worm	Shel	8.75	spgs	spgs	Tut	int-r-w	int-r-w	l	Lavn	c	metl	Blood	Gary K
900	16	Schblr	grav.	cone	Hart	selec	own	amid	3	worm	own	7.75	r-rd	tor-a	Natl	int-r-w	ext-r-w	l	Brns	c	metl	Blood	G. A. Schacht
900	14	Schblr	grav.	cone	Hart	selec	own	amid	3	worm	own	8.66	r-rd	tor-a	Natl	int-r-w	ext-r-w	l	Brns	c	metl	Blood	G. A. Schacht
900	12	Schblr	grav.	cone	Hart	selec	own	amid	3	worm	own	10.3	r-rd	tor-a	Natl	int-r-w	ext-r-w	l	Brns	c	metl	Blood	G. A. Schacht
1,000	10	Schblr	grav.	cone	Hart	selec	own	amid	3	worm	own	14.0	r-rd	tor-a	Natl	int-r-w	ext-d-s	l	Brns	c	metl	Blood	G. A. Schacht
		Carter		d-d	GBS	selec	G-L	mtr	3	bevel	W-M	4	spgs	spgs		int-r-w	ext-r-w		Fost				Gem
	18	Schblr		d-p		plan		jst	2	chn			r-rd									Spicer	Geneva 1
1,050	13	Rayfld	vacm	d-p	B-Beck	id-c	Cotta	mtr	3	worm	Emp	8.6	spgs	spgs		int-r-w	ext-r-w		Ross				Gersix C
1,383	20	Master	vacm	d-p	B-Beck	selec	Covert	mtr	3	in-g	Celfr	7.0	spgs	spgs	Shel	int-r-w	ext-r-w	l	Lavn	c			Globe A1
1,150	20	Marvel	grav	d-d	own	selec	own	mtr	3	bevl	W-M	6.0	r-rd	spgs	W-M	int-r-w	ext-r-w	l	Jacx	c	metl	Univ	G.M.C 16
1,380	18	Marvel	grav	d-d	own	selec	own	mtr	3	worm	Timkn	7.75	r-rd	spgs	Dtrt	int-r-w	int-r-w	l	Lavn	c	metl	Univ	G.M.C 21
1,300	15	Marvel	grav	d-d	own	selec	own	mtr	4	worm	Timkn	9.25	r-rd	spgs	Dtrt	int-r-w	int-r-w	l	Lavn	c	metl	Univ	G.M.C 31
1,210	14	Marvel	grav	d-d	own	selec	own	mtr	4	worm	Timkn	19.25	r-rd	spgs	Dtrt	int-r-w	int-r-w	l	Lavn	c	metl	Univ	G.M.C 41
1,210	12	Marvel	grav	d-d	own	selec	own	amid	4	worm	Timkn	12.0	r-rd	spgs	Dtrt	int-r-w	int-r-w	l	Lavn	c	metl	Univ	G.M.C 71A
1,150	10	Marvel	grav	d-d	own	selec	own	amid	4	worm	Timkn	13.7	r-rd	spgs	Dtrt	int-r-w	int-r-w	l	Lavn	c	metl	Univ	G.M.C 101A
1,300	20	Zenith	grav	d-d	own	mesh	own	amid	3	worm	Shel	6.5	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
1,200	17	Zenith	grav	d-d	own	mesh	own	amid	3	worm	Shel	7.75	spgs	spgs	Shel	ext-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
1,200	16	Zenith	grav	d-d	own	mesh	own	amid	3	worm	Shel	8.66	spgs	spgs	Shel	ext-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
1,150	16	Zenith	grav	d-d	own	mesh	own	amid	3	worm	Shel	7.75	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
1,100	16	Zenith	grav	d-d	own	mesh	own	amid	4	worm	Shel		spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
1,050	11	Zenith	grav	cone	own	mesh	own	amid	4	worm	Shel	9.5	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c			Gramm-Bernstein W
850	10	own		cone		selec		amid	4	in-g		9.3	r-rd	tor-a		ext-r-w	ext-sht						G.V.-Mercedes FV
1,175	18	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Torb	7.0	spgs	spgs		int-r-w	ext-r-w		Lavn		metl	Spicer	Hahn
980	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	7.0	r-rd	tor-a					Ross		metl	Spicer	Hahn
					B-Lipe		B-Lipe				Timkn								Ross		metl	Spicer	Hahn
	18	Zenith	grav	m-d	B-Beck	selec	Covert	mtr	3		Timkn		spgs	spgs	Dtrt	int-r-w	int-r-w	l	Gem	c	metl	K-B	Hall
	15	Zenith	grav	d-d	B-Beck	selec	B-Lipe	mtr	3		Timkn		spgs	spgs	Dtrt	int-r-w	int-r-w	l	Gem	c	metl	K-B	Hall
	12	Zenith	grav	d-d	B-Lipe	selec	B-Lipe	mtr	4		Timkn		spgs	spgs	Dtrt	int-r-w	int-r-w	l	Gem	c	metl	K-B	Hall
		Zenith		d-d	B-Lipe	selec	B-Lipe	jst	3		Timkn		spgs	spgs	Dtrt	int-r-w	int-r-w	l	Gem	c	metl	K-B	Hall
1,025	12	Schblr	grav	cone	own	selec	Roch	jst	3	chn	own	9.4	r-rd			int-r-w	ext-r-w		own				Harrison C
1,000	12	Schblr	grav	cone	own	selec	B-Lipe	jst	3	chn	Timkn	9.6	r-rd			int	ext		Ross				Harrison F
1,000	16	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	7.75	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Harvey WFA
1,000	13	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	8.75	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Harvey WHA
1,000	11	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	8.75	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Harvey WKA
1,000	11	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	8.75	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross		metl	Spicer	Harvey Tractor HT
	15	Master	vacm	d-p	B-Beck	selec	G-Lees	mtr	3	in-g	Celfr	7.0	spgs	spgs	Tut	int-r-w	ext-r-w	l	Lavn	l	metl	Univ	Hawkeye J
1,000	15	Stmbg	grav	d-d	Fuller		Fuller	mtr		worm	Timkn	7.75	r-rd	tor-a	Tut	ext-r-w	ext-r-w	l	Ross	c			Hendrickson G
1,100	14	Stmbg	grav	d-d	B-Beck	prog	Cotta	mtr	3	worm	Timkn	10.3	r-rd	spgs	Tut	int-r-w	int-r-w	l	Ross	r			Hendrickson H
		Schblr	grav	d-d	B-Beck	selec	Warner	mtr	2	in-g	own	13.4	tor-a	tor-a		ext-r-w	int-f-w	c	own	r			Highway Tractor A
1,000	20	Zenith	grav	d-p	B-Beck	mesh	Cotta	mtr	3	worm	Shel	4.5	spgs	spgs		int-r-w	int	l	Lavn	c*	metl	Blood	Higrade A17
		Schblr	vacm	d-d	Fuller	selec	Fuller	mtr	3	worm	Shel	6.5	spgs	spgs	Shel	int-r-w	int-r-w	l	Lavn	c			Hoover 15B
		Master	grav	d-d	B-Lipe	selec	B-Lipe	amid	3	worm	Timkn		r-rd	spgs	Perf		int	l	Ross	c			Horner
		Master	grav	d-d	B-Lipe	selec	B-Lipe	amid	3	worm	Timkn		r-rd	spgs	Perf	ext-r-w	ext-r-w	l	Ross	c			Horner
		Master	grav	d-d	B-Lipe	selec	B-Lipe	amid	3	worm	Timkn		r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c			Horner
		Master	grav	d-d	B-Lipe	selec	B-Lipe	amid	3	worm	Timkn		r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c			Horner
1,375	18	Shkspr	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	6.25	spgs	spgs	Merl	ext-r-w	int-r-w	l	Lavn	c			Hurlburt 1
1,300	16	Shkspr	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	8.66	r-rd	tor-a	Merl	ext-d-s	int-r-w	l	Lavn	c			Hurlburt 2
1,050	13	Shkspr	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	8.66	r-rd	tor-a	Merl	ext-d-s	int-r-w	l	Lavn	c			Hurlburt 3
1,360	12	Shkspr	grav	d-d	B-Lipe	selec	B-Lipe	mtr	4	worm	own	10.3	r-rd	tor-a	Merl	ext-d-s	int-r-w	l	Lavn	c			Hurlburt 5
1,360	12	Shkspr	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	own	13.0	r-rd	tor-a	Merl	int-d-s	int-r-w	l	Lavn	c			Hurlburt 7
1,275	17	Holley	grav	d-d	own	selec	own	amid	3	in-g	own	7.0	spgs	spgs	Perf	int-r-w	int-f-w	l	Ross	c		own	I.H.C. H
1,275	17	Holley	grav	d-d	own	selec	own	amid	3	in-g	own	8.0	spgs	spgs	Perf	int-r-w	int-f-w	l	Ross	c		own	I.H.C. F
1,100	11½	Ensign	vacm	d-d	own	selec	own	amid	3	in-g	own	8.0	spgs	spgs	Perf	int-r-w	int-r-w	l	Ross	c		own	I.H.C. G
1,350		Marvel	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm			spgs	spgs		int-r-w	int-r-w		Lavn				Independent F
		Marvel	grav	d-d		selec		mtr	3	worm			spgs	spgs		int-r-w	int-r-w						Independent G
1,080	15	Stmbg	grav	d-p	B-Beck	selec	Covert	amid	3	worm	own	7.0	spgs	spgs	Kal	int-r-w	int-r-w	l	Lavn	c	metl	Arvac	Indiana T
1,375	20	Stmbg	grav	d-p	B-Beck	selec	Covert	amid	3	worm	Shel	7.75	r-rd	spgs	Kal	int-r-w	int-r-w	l	Lavn	c	metl	Acme	Indiana D
1,150	12	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	15.4	r-rd	spgs	Shel	int-r-w	int-r-w	l	Lavn	c	metl	Acme	Indiana R
800	11	Stmbg	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Shel	8.75	r-rd	spgs	Shel	int-r-w	int-r-w	l	Lavn	c	metl	Spicer	Indiana L
		Carter	grav	d-d	Mech	selec	Mech	mtr	3	bev	Peru		spgs		Lig			l	Lavn	c			Kearns D
1,200	15	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd			int-r-w	int-r-w		Gem				Kelly-Springfield K31
1,200	15	Rayfld	grav	cone	own	selec	Covert	amid	3	worm	own		r-rd	spgs		int-r-w	int-r-w		Gem				Kelly-Springfield K32
1,200	11	Rayfld	grav	cone	own	selec	Covert	amid	3	worm	own		r-rd	spgs		int-r-w	int-r-w		Gem				Kelly-Springfield K36
1,200	11½	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd			int-r-w	int-r-w		Gem				Kelly-Springfield K35
1,100	12	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd			int-r-w	int-r-w		Gem				Kelly-Springfield K40
1,100	12	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd			int-r-w	int-r-w		Gem				Kelly-Springfield K45
1,100	10½	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd			int-r-w	int-r-w		Gem				Kelly-Springfield K50
1,100	10½	Rayfld	grav	cone	own	selec	Covert	amid	3	chn			r-rd						Gem				Kelly-Springfield K60
1,000	12	Schblr	grav	d-d	own	mesh	Cotta	jsh	3	chn	own	8.66	r-rd	s-fm	Perf	int-r-w	ext-j-s	r	Ross	r	metl	Blood	King

ABBREVIATIONS—Makers of Parts

*Other Options
A-K—Atwater Kent
Aut-L—Auto-Lite
B-Beck—Borg & Beck
B-Lipe—Brown-Lipe
Bing—Berling
Brm—Bremer
Bud—Buda
Can—Candler
Celfr—Celfor
Chgo—Chicago
Con—Continental
Conn—Connecticut
Dtrt—Detroit
Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
GBS—Golden, Belknap & Swartz
G&O—G & O Mfg. Co.
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Salsby—Salisbury
Savg—Savage Arms
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sunderman
S-W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE															
				Make	Material	Type	Kind	Sizes in Ins. Front	Sizes in Ins. Rear		Make	No. Cyl. Bore and Stroke N.A.C.C., Hp.	Cylinders Cast	COOLING Water Circ.	COOLING Radiator Make	COOLING Radiator Core and Case	IGNITION Type	IGNITION Make	IGNITION Spark Advance	ELEC. SYSTEM Type	ELEC. SYSTEM Make	ELEC. SYSTEM Extra Cost	GOVERNOR Type	GOVERNOR Make	GOVERNOR Drive
Kissel	2½	1,185	135				pnu.	32x4	32x4		own.	4-3¾x5½-24.0	4	pump				Eismn	hand.	s&l*			cent.	Pierce	motor
Kissel	1½	1,585	152				s.	34x3	34x5		own.	4-3¾x5½-24.0	4	pump				Eismn	hand.	s&l*			cent.	Pierce	motor
Kissel	2	2,275	168				s.	34x4	36x7		own.	4-4½x5½-28.9	4	pump				Eismn	hand.	s&l*			cent.	Pierce	motor
Kissel	3½	3,150	168				s.	36x5	36x5d		own.	4-4½x5½-28.9	4	pump				Eismn	hand.	s&l*			cent.	Pierce	motor
Kleiber	AA 1	2,100	130		rol-c.	s-flx.	s.	34x3½s	34x5s	wd.	Con.	4-3¾x5½-22.5	4	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Kleiber	A 1½	2,500	140		rol-c.	s-flx.	s.	36x3½s	36x6s	wd.	Con.	4-4½x5½-27.2	4	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Kleiber	BB 2	2,750	140		rol-c.	s-flx.	s.	36x4s	36x7s	wd.	Con.	4-4½x5½-27.2	4	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Kleiber	B 2½	3,200	150		rol-c.	s-flx.	s.	36x4s	36x4d	wd.	Con.	4-4½x5½-32.4	2	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Kleiber	C 3½	3,850	160		rol-c.	s-flx.	s.	36x5s	36x5d*	wd.	Con.	4-4½x5½-32.4	2	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Kleiber	D 5	4,900	170		rol-c.	s-flx.	s.	36x6s	40x6d	wd.	Con.	4-5½x5½-44.2	2	cent.	Perf.	z-z-t-s	dual.	Bosch	hand.				cent.	Pierce	motor
Knox	35	4,500	108½		rol-c.	rigid.	s.	36x5s	38x6d	c-s.	own.	4-5x5½-40.0	2	cent.	Fed.	cel-sht.	sing.	Eismn	hand.	s&l2.	Bijur.		none	none	
Knox	36 3	5,000	108½		rol-c.	rigid.	s.	36x4s	38x6d*	c-s.	own.	4-5x5½-40.0	2	cent.	Fed.	cel-sht.	sing.	Eismn	hand.	s&l2.	Bijur.		none	none	
Koehler	K 1½	1,150	129	own.	rol-c.		s.	34x3s	34x4s	wd.	own.	4-3½x5 -19.6	4	ther.	own.	fin-cst	sing.	Eismn	hand.						
Koehler Tractor	KT 3	1,550	106	own.	rol-c.	rigid.	s.	34x3s	34x5s	wd.	own.	4-3½x5 -19.6	4	ther.	own.	fin-cst	sing.	Eismn	fix					Mnrch	
Lambert	V2 1	1,700	144				s.	36x3½	36x4		Rut.	4-4½x5½-29.0	1				sing*	Rem*	hand.	l&i	Vesta		cent.	Pierce	motor
Lamson	1½	1,850	150*				s.	36x3½	36x5		Wis.	4-4 x5 -25.6	4				dual.	Bosch	hand.	l&i	Vesta		cent.	Simplex	
Lamson	2½	2,450	160*				s.	36x4	36x7		Wis.	4-4 x6 -25.6	4				dual.	Bosch	hand.	l&i	Vesta		cent.	Simplex	
Lamson	3½	3,150	170*				s.	36x5	40x5d		Wis.	4-4½x5½-36.2	2				dual.	Bosch	hand.	l&i	Vesta		cent.	Simplex	
Lamson	5	4,150	180*				s.	36x6	40x6d		Wis.	4-5 11/16x5½-41.6	2				dual.	Bosch	hand.	s&l			cent.	Simplex	
Lane	F 1½	1,750	135	own.	rol-c.	rigid.	s.	34x3½s	34x4s	wd.	Con.	4-3½x5 -19.6	4	ther.	own.	fin-cst	sing.	Conn.	hand.	sl&i2.	Roth.	none	cent.	Pierce	motor
Lane	B 2½	2,500	150	own.	rol-c.	rigid.	s.	34x4s	36x6s	wd.	Con.	6-3½x5½-29.4	4	cent.	own.	fin-cst	sing.	Conn.	hand.	sl&i2.	Eoth.	none	cent.	Pierce	motor
Lane	C 3½	3,250	160	own.	rol-c.	rigid.	s.	36x5s	36x5d	wd.	Con.	6-3½x5½-33.7	3	cent.	own.	fin-cst	sing.	Conn.	hand.	sl&i2.	Roth.	none	cent.	Pierce	motor
Lange	C 1½	1,950	136		rol-c.	rigid.	s.	36x4s	38x6s	wd.	Con.	4-4½x5½-27.2	4	ther.	Fed.	sq-t-sht.	sing.	Bosch	hand.				cent.	Pierce	motor
Lange	B 2½	2,650	136		rol-c.	rigid.	s.	36x4s	38x6s	wd.	Con.	4-4½x5½-27.2	4	ther.	Fed.	sq-t-sht.	sing.	Bosch	hand.				cent.	Pierce	motor
Lapeer	A 3	1,500	90		rol-c.	s-flx.	s.	32x3½s	32x5s	wd.	Wau.	4-3½x5 -19.6	4	cent.	Can.	cel-cst.	sing.	Spltf.	fix	none	none	none	cent.	Pierce	motor
Lapeer	C 5	1,900	90		rol-c.	s-flx.	s.	32x3½s	32x3½d*	wd.	Wau.	4-3½x5½-19.6	4	cent.	Can.	cel-cst.	sing.	Spltf.	fix	none	none		cent.	Wau	motor
Larrabee	M 1	1,800	130	Prsh.	p-stl.	flex.	s.	34x3½s	34x5s	wd.	Con.	4-3½x5 -22.5	4	ther.	Bush.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Wau	motor
Larrabee	N 1½	2,000	140	Prsh.	p-stl.	flex.	s.	36x3½s	36x5s	wd.	Con.	4-4½x5½-27.2	4	cent.	Bush.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Larrabee	O 2½	2,700	154	Prsh.	p-stl.	flex.	s.	36x4s	36x7s	wd.	Con.	4-4½x5½-27.2	4	cent.	Bush.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Larrabee	R 3½	3,400	154	Prsh.	p-stl.	flex.	s.	36x5s	36x5s	wd.	Con.	4-4½x5½-32.4	4	cent.	Bush.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Lawson	35 ½		112				pnu.	31x4	31x4		GBS.	4-3¼x4½-22.5	4				sing.	Dixie.	hand.	s&l					
Lippard-Stewart	MW ¾	1,025	106	P&B.	p-stl.	flex.	pnu.	33x4s	33x4s	wd.	Wis.	4-3½x5 -16.9	4	ther.	Mayo	cel-sht.	sing.	Eismn	fix	opt.	Remy				
Lippard-Stewart	W ¾	1,750	125	P&B.	p-stl.	s-flx.	opt.	34x3s*	34x4s*	wd.	Con.	4-3½x5½-22.5	4	cent.	Fed.	cel-sht.	sing.	Eismn	fix	opt.	Dynt.		cent.	Pierce	motor
Lippard-Stewart	HW 1	2,000	135	P&B.	p-stl.	s-flx.	s.	36x3s	36x5s	wd.	Con.	4-3½x5½-22.5	4	cent.	Fed.	cel-cst.	sing.	Eismn	fix	s&l	Dynt.		cent.	Pierce	motor
Lippard-Stewart	F 1½	2,450	158	P&B.	p-stl.	s-flx.	s.	36x3½s	36x3d	wd.	Con.	4-4½x5½-27.2	4	cent.	Fed.	cel-cst.	sing.	Eismn	fix	s&l	Dynt.		cent.	Pierce	motor
Lippard-Stewart	G 2	2,700	165	P&B.	p-stl.		s.	36x4s	36x4d	wd.	Con.	4-4½x5½-27.2	4	cent.	Fed.	cel-cst.	sing.	Eismn	fix	s&l	Dynt.		cent.	Pierce	motor
Little Giant	15 ¾	1,500	138				p*	34x4	34x3½			4-3½x5 -19.6	4				sing.	Eismn	hand.						
Little Giant	H 1	1,400	110				s.	36x3	36x3½		Con.	4-3½x5½-19.6	4				sing.	Eismn	hand.						
Little Giant	H 1½	1,500	110				s.	36x3½	36x4		Bud.	4-3½x5½-19.6	4				sing.	Eismn	hand.						
Little Giant	16 2	2,500	144				s.	36x4	36x6		Con.	4-4½x5½-27.2	4				sing.	Eismn	hand.						
Lumb	C 2½	1,900	148		rol-c.		opt.			wd.	Bud.	4-4½x5½-28.9	4	cent.	Chgo	fin-cst	sing.	Bosch	hand.	ltg.		none	suct.	Mnrch	
Maccar	L 1½	2,400	150	Prsh.	p-stl.	rigid.	s.	36x4s	36x5s	wd.	Con.	4-4½x5½-27.2	4	cent.	Bush.	fin-sht.	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Maccar	H 2½	2,950	162	Prsh.	p-stl.	rigid.	s.	36x4s	36x4d	wd.	Con.	4-4½x5½-32.4	2	cent.	own.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Maccar	M 3½	3,600	174	Prsh.	p-stl.	rigid.	s.	37x5s	37x5d	wd.	Con.	4-4½x5½-32.4	2	cent.	own.	fin-cst	sing.	Bosch	hand.	none	none		cent.	Pierce	motor
Maccar	U 5½		186	Prsh.	p-stl.	rigid.	s.	37x5s	37x5d	wd.					own.	fin-cst	sing.	Bosch	hand.						
Mack	AB 1	2,400	144*		p-stl.	s-flx.	s.	36x4s	36x3½d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AB 1	2,400	144*		p-stl.	s-flx.	s.	36x4s	36x3½d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AB 1½	2,800	162*		p-stl.	s-flx.	s.	36x4s	36x3½d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AB 1½	2,800	162*		p-stl.	s-flx.	s.	36x4s	36x3½d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AB 2	3,000	162*		p-stl.	s-flx.	s.	36x4s	36x4d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AB 2	3,000	162*		p-stl.	s-flx.	s.	36x4s	36x4d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AC 3½	4,250	180*		p-stl.	s-flx.	s.	36x5s	40x5d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack Tractor	AB 5	3,100	120		p-stl.	s-flx.	s.	36x4s	36x4d	wd.	own.	4-4 x5 -25.6	2	cent.	own.	cel-sht.	sing.	Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AC 5½	4,750	180*		p-stl.	s-flx.	s.	36x6s	40x6d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack Tractor	AC 7	4,250	119		p-stl.	s-flx.	s.	36x5s	40x5d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack	AC 7½	5,000	180*		p-stl.	s-flx.	s.	36x7s	40x7d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack Tractor	AC 11	4,750	119		p-stl.	s-flx.	s.	36x6s	40x6d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Mack Tractor	AC 15	5,000	119		p-stl.	s-flx.	s.	36x7s	40x7d	wd.	own.	4-5 x6 -40.0	2	cent.	own.	rng-cst		Spltf.	hand.	opt.	opt.		cent.	own	motor
Manly	30 1½	2,050	156		p-stl.	flex.	s.	36x4s	36x5s	wd.		4-3½x5½-22.5	4	cent.		p-t-ci	sing.	Eismn	hand.	s&l	opt.		cent.		motor
Manly	40 2	2,250	156		p-stl.	flex.	s.	36x4s	36x6s	wd.		4-3½x5½-22.5	4	cent.		p-t-ci	sing.	Eismn	hand.	s&l	opt.		cent.		motor
Manly	50 2½	2,600	168		p-stl.	flex.	s.	36x4s	40x7s	wd.		4-4 x5½-25.6	2	cent.		p-t-ci	sing.	Eismn	hand.	s&l	opt.		cent.		motor
Manly	60 3	3,000	168		p-stl.	flex.	s.	36x5s	40x8s	wd.		4-4½x5½-28.9	2	cent.		p-t-ci	sing.	Eismn	hand.	s&l	opt.		cent.		motor
Master	M 2	1,990	144				s.	34x4	36x6		Bud.	4-4½x5½-28.9	4				sing.	Eismn	fix				suct.	Mnrch	
Master	3½	2,990	160*								Bud.	4-4½x5½-27.2													
Maxfer	1	1,195	130		pnu*			36x4	34x4			4-3½x5 -19.6		ther.				Eismn							
Maxwell	1	865	124	Hyd.	p-stl.	s-flx.	s.	32x3s	32x4s	wd.	own.	4-3¾x4½-21.0	4	ther.	own.	fin-p-s	sing.	A-K.	hand.	ltg.	A-L.	none	suct.	none	motor
Menominee	EW ¾	1,425	124		rol-c.	s-flx.	s.	34x3½s	34x4s	wd.	Con.	4-3½x5 -22.5	4	ther.	Long.	fin-p-s	sing.	Eismn	hand.				cent.	own	d-s
Menominee	FW 1	1,790	130		rol-c.	s-flx.	s.	36x3½s	36x4s	wd.	Con.	4-3½x5½-22.5	4	cent.	Long.	fin-p-s	sing.	Eismn	hand.				cent.	own	
Menominee	H 1½	2,050	144		rol-c.	s-flx.	s.	36x3½s	36x5s	wd.	Con.	4-3½x5½-22.5	4	cent.	Long.	fin-p-s	sing.	Eismn	hand.				l-b	own	d-s
Menominee	D 2	2,475	144		rol-c.	s-flx.	s.	36x4s	36x6*	wd.	Con.	4-4½x5½-27.2	2	cent.	R-T.	fin-cst	sing.	Eismn	hand.				cent.	own	d-s
Menominee	G 3½	3,275	160		rol-c.	s-flx.	s.	36x5s	36x5d	wd.	Con.	4-4½x5½-32.4	2	cent.	R-T.	fin-cst	sing.	Eismn	hand.				cent.	own	
Modern	30	1,800	132		p-stl.	s-flx.	s.	34x3½s	34x5s	wd.	Con.	4-3½x5 -22.5	4	cent.	Long.	fin-cst	dual.	opt.	fix	none	none		opt.	opt.	opt.
Moreland	1	1,900	126		p-stl.	s-flx.	s.	34x3½s	34x4s	wd.	Con.	4-3½x5 -22.5	4	ther.	own.	cel-sht.	sing.	Dixie.	hand.	opt.	West.		none	none	

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
fix—fixed
flex—flexible
fric—friction
gset—gearset
grav—gravity
hyd—hydraulic
ind-c—individual clutch
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-dst—internal drive-shaft
int-f-w—infernal front wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square tube core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk in oil
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag tube core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Continued

ENGINE				TRANSMISSION											BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE							STEERING GEAR					
Motor in R.p.m.	Truck in M.p.h.	Carbureter, Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Springs, Make	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
1,060	22	Stmbg..	vacm..	cone..	Warner	selec..	Warner	mtr..	3	bevel..	own....	4.58	spgs..	spgs..	.....	ext-r-w.	ext-r-w.	.....	Jacx..	.....	.....	.....	Kissel
1,100	17	Stmbg..	vacm..	d-p...	Warner	selec..	Warner	mtr..	3	worm	Shel...	6.5	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Jacx..	.....	.....	.....	Kissel
1,190	15	Stmbg..	vacm..	d-p...	B-Beck.	selec..	Muncie	mtr..	4	worm	Timkn.	8.5	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Lavn..	.....	.....	.....	Kissel
1,245	13	Stmbg..	vacm..	d-p...	Warner	selec..	Warner	mtr..	4	worm	Shel...	10.3	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	Kissel
1,300	20	opt....	grav*..	d-d...	B-Lipe..	selec..	B-Lipe.	amid..	3	worm	Timkn.	6.7	spgs..	spgs..	Betts..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Kleiber
1,250	18	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	3	worm	Shel...	7.75	spgs..	spgs..	Betts..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Kleiber
1,250	16	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	3	worm	Timkn.	8.5	spgs..	spgs..	Betts..	int-....	int-....	r....	Ross..	c....	.....	.....	Kleiber
1,200	14	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	3	worm	Shel...	8.75	spgs..	spgs..	Betts..	int-....	int-....	r....	Ross..	c....	.....	.....	Kleiber
1,250	16	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	4	worm	Timkn.	10.33	spgs..	spgs..	Betts..	int-....	int-....	r....	Ross..	c....	.....	.....	Kleiber
1,200	14	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	4	worm	Timkn.	11.66	spgs..	spgs..	Betts..	int-....	int-....	r....	Ross..	c....	Metl..	K-B..	Knox
1,200	12	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	4	worm	Timkn.	11.66	spgs..	spgs..	Betts..	int-r-w.	ext-j-s.	l....	Ross..	c....	Metl..	K-B..	Knox
1,150	10	opt....	grav*..	m-d...	H-Shaw	selec..	B-Lipe.	amid..	4	worm	Timkn.	11.66	spgs..	spgs..	Betts..	int-r-w.	ext-j-s.	l....	Ross..	c....	Metl..	K-B..	Knox
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	Zenith..	vacm..	d-p...	.....	selec..	.....	jsh....	3	chn...	Timkn.	9.6	r-rd....	.....	Iron...	int-r-w.	ext-j-s.	l....	Ross..	c....	Metl..	K-B..	Koehler
.....	.....	Zenith..	vacm..	d-p...	own....	selec..	own....	jsh....	3	chn...	Timkn.	12.0	r-rd....	.....	Iron...	int-r-w.	ext-r-w.	l....	own...	c....	Metl..	K-B..	Koehler Tractor
.....	.....	Zenith..	vacm..	d-p...	own....	selec..	own....	jsh....	3	chn...	Torb...	7.0	spgs..	spgs..	.....	int-r-w.	ext-r-w.	l....	own...	c....	Metl..	K-B..	Koehler Tractor
1,400	20	Stmbg..	grav..	d-d...	M&M..	selec..	M&M..	mtr...	3	in-g...	Torb...	7.0	spgs..	spgs..	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,400	20	Stmbg..	grav..	d-d...	M&M..	selec..	M&M..	mtr...	3	in-g...	Torb...	7.0	spgs..	spgs..	.....	int-r-w.	ext-r-w.	l....	own...	c....	Metl..	K-B..	Koehler Tractor
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,400	20	Stmbg..	grav..	d-d...	M&M..	selec..	M&M..	mtr...	3	in-g...	Torb...	7.0	spgs..	spgs..	.....	int-r-w.	ext-r-w.	l....	own...	c....	Metl..	K-B..	Koehler Tractor
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	r-rd....	.....	.....	int-....	ext-....	.....	Jacx..	.....	.....	.....	Lambert
1,500	.....	Schblr..	grav..	.....	own...	fric....	.....	chn...	.....	worm	Shel...	7.7	spgs..	spgs..	.....	int-r-w.	ext-r-w.	.....	Ross..	.....	.....	.....	Lamson
1,200	16	Stmbg..	vacm..	d-p...	B-Beck.	id-c....	Cotta..	mtr...	3	worm	Shel...	.....	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	Lamson
1,200	14	Stmbg..	vacm..	d-p...	B-Beck.	id-c....	Cotta..	mtr...	3	worm	Shel...	11.7	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	Lamson
1,200	12	Stmbg..	vacm..	d-p...	B-Beck.	id-c....	Cotta..	amid..	3	worm	Shel...	11.7	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	Lamson
1,200	10	Stmbg..	vacm..	d-p...	B-Beck.	id-c....	Cotta..	amid..	3	worm	Wis....	7.2	spgs..	spgs..	Kal...	int-r-w.	ext-f-w.	l....	Lavn..	c....	Metl..	Acme..	Lane
1,200	18	Stmbg..	vacm..	d-d...	B-Beck.	selec..	Fuller..	mtr...	3	worm	Timkn.	7.75	spgs..	spgs..	Kal...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Acme..	Lane
1,200	18	Stmbg..	vacm..	d-p...	B-Beck.	selec..	Covert.	amid..	3	worm	Shel...	8.75	spgs..	spgs..	Kal...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Acme..	Lane
1,200	12	Stmbg..	vacm..	d-p...	B-Beck.	selec..	Covert.	amid..	3	worm	Shel...	8.75	spgs..	spgs..	Kal...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Acme..	Lane
1,250	15	Stmbg.	grav..	m-d...	M-Evn.	.....	Cotta..	amid..	3	chn...	.....	9.2	r-rd....	.....	Std...	int-r-w.	ext-d-s.	l....	.....	c....	.....	.....	Lange
1,250	15	Stmbg..	grav..	m-d...	M-Evn.	.....	Cotta..	amid..	3	chn...	.....	9.2	r-rd....	.....	Std...	int-r-w.	ext-d-s.	l....	.....	c....	.....	.....	Lange
1,000	12	Stewrt..	grav..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	in-g...	Torb...	10.0	spgs..	spgs..	Ligt...	int-r-w.	ext-r-w.	l....	Ross..	c....	.....	.....	Lapeer
1,000	8	Stewrt..	grav..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	in-g...	Torb...	13.0	spgs..	spgs..	Ligt...	int-r-w.	ext-r-w.	l....	Ross..	c....	.....	.....	Lapeer
1,400	18	Schblr.	grav..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	worm	Shel...	6.5	spgs..	spgs..	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Univ...	Larrabee
1,200	15	Schblr.	grav..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	worm	Shel...	7.75	spgs..	spgs..	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Univ...	Larrabee
1,200	14	Schblr.	grav..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	worm	Shel...	8.75	spgs..	spgs..	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Univ...	Larrabee
1,200	17	Schblr.	grav..	d-d...	Muncie	selec..	Muncie	mtr...	4	worm	Shel...	11.5	spgs..	spgs..	Merl...	int-r-w.	int-r-w.	l....	Lavn..	c....	Metl..	Univ...	Larrabee
.....	.....	Schblr.	grav..	.....	G-Lees.	selec..	G-Lees.	mtr...	4	bevel..	Pree...	4.3	spgs..	spgs..	.....	int-....	ext-....	.....	Jacx..	c....	Metl..	Spicer..	Lawson
1,500	25	Zenith..	grav..	cone..	own....	selec..	Covert.	amid..	3	worm	Timkn.	5.8	spgs..	spgs..	Mthr...	int-r-w.	int-....	l....	Ross..	c....	Metl..	Spicer..	Lippard-Stewart
1,200	20	Zenith..	grav..	cone..	Hart...	selec..	B-Lipe.	amid..	3	worm	Timkn.	6.0	spgs..	spgs..	Mthr...	int-r-w.	int-r-w.	l....	Ross..	c....	Metl..	Spicer..	Lippard-Stewart
1,180	18	Zenith..	grav..	cone..	Hart...	selec..	B-Lipe.	amid..	3	worm	Timkn.	7.0	spgs..	spgs..	Mthr...	int-r-w.	int-....	l....	Ross..	c....	Metl..	Spicer..	Lippard-Stewart
1,300	18	Zenith..	grav..	cone..	Hart...	selec..	B-Lipe.	amid..	3	worm	Timkn.	7.75	spgs..	spgs..	Mthr...	int-r-w.	int-....	l....	Ross..	c....	Metl..	Spicer..	Lippard-Stewart
1,295	15	Zenith..	grav..	cone..	Hart...	selec..	B-Lipe.	amid..	3	worm	Timkn.	9.2	spgs..	spgs..	Mthr...	int-r-w.	int-r-w.	l....	Jacx..	.....	.....	.....	Little Giant
.....	.....	Schblr..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	jst....	3	chn...	Timkn.	6.0	spgs..	spgs..	.....	int-r-w.	int-r-w.	.....	Jacx..	.....	.....	.....	Little Giant
.....	.....	Schblr..	grav..	dsk...	B-Lipe.	.....	.....	.....	3	chn...	Timkn.	6.8	r-rd....	.....	.....	ext-r-w.	ext-j-s.	.....	Jacx..	.....	.....	.....	Little Giant
.....	.....	Schblr..	grav..	dsk...	B-Lipe.	.....	.....	.....	3	chn...	Russl..	6.8	r-rd....	.....	.....	ext-....	ext-....	.....	Jacx..	.....	.....	.....	Little Giant
.....	.....	Schblr..	grav..	dsk...	Hoosir..	selec..	Covert.	jst....	3	chn...	Russl..	6.8	r-rd....	.....	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	Lumb
.....	.....	Schblr..	grav..	dsk...	B-Lipe.	selec..	.....	mtr...	3	worm	.....	7.7	spgs..	spgs..	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	Schblr..	grav..	d-d...	B-Lipe.	selec..	.....	mtr...	3	in-g...	.....	.....	.....	.....	spgs..	Shel...	ext-r-w.	int-....	l....	Lavn..	c....	Metl..	Spicer..
1,100	15	Stmbg..	vacm..	d-d...	.....	selec..	.....	mtr...	3	worm	Timkn.	7.0	r-rd....	spgs..	Merl...	int-r-w.	int-r-w.	l....	Ross..	c....	Metl..	Spicer..	Maccar
1,000	16	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	7.75	r-rd....	spgs..	Merl...	int-r-w.	int-....	l....	Ross..	c....	Metl..	Spicer..	Maccar
1,000	15	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	10.3	r-rd....	spgs..	Merl...	int-r-w.	int-r-w.	l....	Ross..	c....	Metl..	Spicer..	Maccar
1,000	14	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	amid..	4	worm	Timkn.	11.5	r-rd....	spgs..	Merl...	int-r-w.	int-r-w.	l....	Ross..	c....	Metl..	Spicer..	Maccar
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	own...	7.75	spgs..	spgs..	Mthr...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	opt....	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	own...	6.29	r-rd....	.....	Mthr...	int-r-w.	int-d-s.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	worm	Timkn.	8.5	spgs..	spgs..	Mthr...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	Timkn.	6.99	r-rd....	.....	Mthr...	int-r-w.	ext-d-s.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	worm	Timkn.	8.5	spgs..	spgs..	Mthr...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	own...	6.99	r-rd....	.....	Mthr...	int-r-w.	ext-d-s.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	own...	7.45	r-rd....	.....	Mthr...	int-r-w.	ext-j-s.	l....	Gem..	c....	.....	.....	Mack Tractor
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	own...	10.5	r-rd....	.....	Mthr...	int-r-w.	ext-d-s.	l....	Gem..	c....	.....	.....	Mack
1,275	.....	Stmbg*	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	4	chn...	own...	8.4	r-rd....	.....	Mthr...	int-r-w.	ext-j-s.	l....	Gem..	c....	.....	.....	Mack Tractor
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	own...	10.77	r-rd....	.....	Mthr...	int-r-w.	ext-j-s.	l....	Gem..	c....	.....	.....	Mack
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	own...	11.58	r-rd....	.....	Mthr...	int-r-w.	ext-j-s.	l....	Gem..	c....	.....	.....	Mack Tractor
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	own...	11.5	r-rd....	.....	Mthr...	int-r-w.	ext-j-s.	l....	Gem..	c....	.....	.....	Mack Tractor
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	own...	14.1	r-rd....	.....	.....	int-r-w.	ext-r-w.	l....	.....	c....	.....	.....	Manly
1,000	.....	Stmbg*	grav..	d-p...	own...	selec..	own...	amid..	3	chn...	.....	7.5	r-rd....	tor-a..	.....	int-r-w.	ext-r-w.	l....	.....	c....	.....	.....	Manly
1,125	16	Zenith..	vacm..	d-d...	.....	selec..	.....	mtr...	3	worm	.....	8.7	r-rd....	tor-a..	.....	int-r-w.	int-r-w.	l....	.....	c....	.....	.....	Manly
1,225	15	Zenith..	vacm..	d-d...	.....	selec..	.....	mtr...	4	worm	.....	8.75	r-rd....	tor-a..	.....	int-r-w.	int-r-w.	l....	.....	c....	.....	.....	Master
1,020	14	Zenith..	vacm..	d-d...	.....	selec..	.....	mtr...	4	worm	.....	8.75	r-rd....	tor-a..	.....	int-r-w.	ext-r-w.	l....	Lavn..	c....	.....	.....	Master
950	13	Zenith..	vacm..	d-d...	.....	selec..	.....	mtr...	3	in-g...	Torb...	8.0	spgs..	spgs..	Dtrt...	int-r-w.	ext-r-w.	l....	.....	c....	.....	.....	Maxfer
.....	15	Master.	pres..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	worm	own...	.....	spgs..	spgs..	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	int-r-w.	ext-r-w.	.....	.....	.....	.....	.....	Maxwell
.....	.....	.....	cone..	.....	.....	selec..	.....	mtr...	3	worm	own...	7.25	spgs..	spgs..	.....	int-r-w.	int-r-w.	l....	own...	c....	block..	own...	Menominee
1,540	20	K-D...	grav..	cone..	own...	selec..	own...	mtr...	3	worm	Timkn.	6.0	r-rd....	spgs..	Tut...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Menominee
900	25	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	8.75	r-rd....	spgs..	Tut...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Menominee
850	16	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	9.25	r-rd....	spgs..	Tut...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Menominee
800	15	Stmbg..	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	9.25	r-rd....	spgs..	Tut...	int-r-w.	int-r-w.	l....	Gem..	c....	.....	.....	Menominee
750	14	Stmbg..	grav..	d-p...	B-Beck.	selec..	Cotta..	amid..	3	worm	Timkn.	10.3	r-rd....	spgs..	Perf...	ext-r-w.	ext-r-w.	r....	Ross..	c....	.....	.....	Modern
750	12	Stmbg..	grav..	d-p...	B-Beck.	selec..	Fuller..	mtr...	3	worm	Timkn.	.....	r-rd....	spgs..	own...	int-r-w.	int-r-w.	.....	Ross..	c....	.....	.....	Moreland
.....	.....	Zenith..	vacm..	d-d...	Fuller..	selec..	Fuller..	mtr...	3	worm	Timkn.	6.0	spgs..	spgs..	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	Mastr*.	grav..	d-d...	B-Lipe.	selec..	B-Lipe.	mtr...	3	worm	Timkn.	6.0	spgs..	spgs..	.....	own...	int-r-w.	int-r-w.	.....	Ross..	c....	.....	.....

ABBREVIATIONS—Makers of Parts

*Other Options

A-K—Atwater-Kent
Aut-L—Auto-Lite
B-Beck—Borg & Beck
B-Lipe—Brown-Lipe
Blng—Berling
Brm—Bremer
Bud—Buda
Can—Candler
Celfr—Celfor
Chgo—Chicago
Con—Continental
Conn—Connecticut
Dtrt—Detroit
Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Savg—Savage Arms
Salsby—Salisbury
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Splf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sndmn—Sunderman
S-W—Sparks Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE				COOLING			IGNITION			ELEC. SYSTEM			GOVERNOR		
				Make	Material	Type	Kind	Sizes in Ins. Front	Sizes in Ins. Rear		Make	No. Cyl. Bore and Stroke—N.A.C.C. Hp.	Cylinders Cast	Water Circ.	Radiator Make	Radiator Core and Case	Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make	Drive
Moreland	1½	.....	106	.....	p-stl	s-flx	s	36x3½s	36x5s	c-s	Con	4-4½x5½-27.2	4	cent	own	cel-sht	sing	Dixie	hand	opt	West	.....	cent	Pierce	mot
Moreland	2½	3,000	144	.....	p-stl	s-flx	s	36x4s	36x7s	c-s	Con	4-4½x5½-32.4	2	cent	own	cel-sht	dual	Dixie	hand	opt	West	.....	.....	Pierce	mot
Moreland	4	3,800	162	.....	p-stl	s-flx	s	36x5s	40x5d	c-s	Wau	4-4½x6½-36.1	2	cent	own	cel-sht	dual	Dixie	hand	opt	West	.....	cent	Wau	
Moreland	5	4,500	.....	.....	p-stl	.....	s	36x6s	40x6d	c-s	Wau	4-4½x6½-36.1	2	cent	own	cel-sht	dual	Dixie	hand	opt	West	.....	cent	Wau	
Muskegon	20	2,200	144	P&B	p-stl	s-flx	s	36x4	36x6	wd	Con	4-4½x5½-27.2	4	cent	own	cel-cst	sing	Eismn	fix	ltg*	.....	opt	cent	Pierce	mot
Nash	2017	1	1,495	130	Smth	p-stl	flex	s*	34x3	34x4	wd	own	4-3½x5½-22.5	4	cent	M'C	fin-cst	sing	Delco	hand	s&i2	Bijur	stk	cent	Simplex	mot
Nash	4017	2	3,250	124	Smth	p-stl	flex	s	36x5	36x5	c-s	Bud	4-4½x5½-28.9	4	cent	M'C	fin-cst	sing	Eismn	hand	s&l2	Bijur	125	cent	Duplex	dup
Nelson & LeMoon	E	1½	1,900	opt	.....	rol-c	s-flx	s	36x3½	36x5	wd	Con	4-3½x5½-22.5	4	cent	Chg	zz-t-ps	sing	Bosch	hand	sl&i	West	125	suct	Mnrch	mot
Nelson & LeMoon	E	2	2,250	opt	.....	rol-c	s-flx	s	36x4	36x7	wd	Con	4-4½x5½-27.2	4	cent	Chg	zz-t-ps	dual	Bosch	hand	sl&i	West	125	suct	Mnrch	mot
Nelson & LeMoon	E	3	2,950	opt	.....	rol-c	s-flx	s	36x5	38x5d	wd	Con	4-4½x5½-32.4	2	cent	Chg	zz-t-ps	dual	Bosch	hand	sl&i	West	125	suct	Mnrch	mot
Nelson & LeMoon	5	3,750	opt	.....	rol-c	s-flx	s	36x6	40x6d	wd	Bud	4-4½x6 -32.4	4	cent	Chg	zz-t-ps	dual	Bosch	hand	sl&i	West	125	suct	Mnrch	mot
Netco	D	2	2,500	144	Prsh	p-stl	rigid	s	36x4	36x6	wd	Con	4-4½x5½-27.2	4	cent	R-T	fin-cst	sing	Eismn	fix	none	none	.....	none	none	
New York	M	1½	2,200	144*	.....	.....	.....	s	36x3½	36x5	.....	.....	4-4½x5½-27.2	4	.....	.....	.....	sing	Bosch	fix	.....	.....	.....	cent	Pierce	mot
New York	N	2	2,600	144	.....	.....	.....	s	36x4	36x4d	.....	.....	4-4½x5½-27.2	.....	.....	.....	.....	sing	Bosch	fix	.....	.....	.....	cent	Pierce	mot
Niles	B	1	1,500	124	.....	.....	.....	pnu	35x5	35x5	.....	Con	4-3½x5 -19.6	4	ther	.....	.....	sing	Eismn	hand	.....	.....	.....	cent	Pierce	mot
Niles	E	2	2,400	140*	.....	.....	.....	s	36x4	36x7	.....	Con	4-4½x5½-27.2	4	.....	.....	.....	sing	Eismn	hand	.....	.....	.....	cent	Pierce	mot
Noble	NW	2	2,300	148	Dtrt	p-stl	.....	.....	36x4	36x6	.....	Con	4-4½x5½-27.2	.....	.....	.....	.....	.....	Eismn	.....	.....	.....	35	.....	Pierce	
Old Hickory	M	¾	875	112	.....	rol-c	flex	pnu	33x4	33x4	wd	Lyc	4-3½x5 -16.9	4	ther	Can	sq-t-ps	sing	Conn	hand	sl&i	Dynt	stk	none	none	
Old Reliable		1½	1,950	150*	.....	p-stl	.....	s	34x3½	36x6	.....	Wis	4-3½x5 -22.5	4	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	.....	.....	
Old Reliable		2	2,450	150	.....	.....	.....	s	34x4	36x4d	.....	Wis	4-4 x6 -25.6	4	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	cent	Duplex	dup
Old Reliable		2½	2,750	.....	.....	.....	.....	s	34x4	36x4d	.....	Wis	4-4½x5 -29.0	2	.....	.....	.....	sing	Bosch	hand	.....	.....	.....	.....	.....	
Old Reliable		3	3,250	150	.....	.....	.....	s	34x5	36x5d	.....	Wis	4-4½x6 -29.0	4	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	cent	Duplex	dup
Old Reliable		4	3,750	.....	.....	.....	.....	s	36x5	40x5d	.....	Wis	4-4½x5½-36.2	2	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	cent	Duplex	dup
Old Reliable		4	3,750	.....	.....	.....	.....	s	36x6	36x6d	.....	Wis	4-4½x5½-36.2	2	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	.....	.....	
Old Reliable		5	4,500	150*	.....	.....	.....	s	36x6	36x6d	.....	Wis	4-4½x5½-36.2	2	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	cent	Duplex	dup
Old Reliable		7	5,000	150	.....	.....	.....	s	36x6	40x7d	.....	.....	4-5½(ox5½)-41.6	2	.....	.....	.....	sing	Bosch	hand	ltg	.....	.....	cent	Duplex	dup
Oneida	A	1	2,000	130	own	rol-c	s-flx	s	36x3½	36x5	wd	Con	4-3½x5½-22.5	4	cent	Long	fin-cst	sing	Bosch	hand	ltg	Bosch	stk	cent	Duplex	mot
Oneida	B	1½	2,650	130	own	rol-c	s-flx	s	36x3½	36x5	wd	Con	4-4½x5½-27.23	4	cent	Long	fin-cst	sing	Bosch	hand	ltg	Bosch	stk	cent	Duplex	mot
Oneida	C	2	3,000	144	own	rol-c	s-flx	s	36x4	36x4d*	wd	Con	4-4½x5½-27.23	4	cent	Long	fin-cst	sing	Bosch	hand	ltg	Bosch	stk	cent	Duplex	mot
Oneida	D	3½	3,600	160	own	rol-c	s-flx	s	36x5	36x5d	wd	Con	4-4½x5½-32.40	2	cent	Long	fin-cst	sing	Bosch	hand	ltg	Bosch	stk	cent	Duplex	mot
Overland		.....	635	104	.....	p-stl	rigid	pnu	31x4	31x4	wd	own	4-3½x5 -18.23	4	ther	own	cel-ps	sing	opt	hand	sl&i 2	A-L	none	none	none	
Overland		.....	800	106	.....	p-stl	rigid	pnu	33x4½	33x4½	wd	own	4-4½x4½-27.23	4	ther	own	cel-ps	sing	opt	hand	sl&i 2	A-L	none	none	none	
Packard	D	1	2,450	126*	.....	.....	.....	s	34x3½	34x6	.....	own	4-4 x5½-25.6	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard	D	1½	2,880	126*	.....	.....	.....	s	34x3½	34x3½d	.....	own	4-4 x5½-25.6	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard	D	2	3,200	144*	.....	.....	.....	s	34x4	34x4d	.....	own	4-4 x5½-25.6	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard	D	3	3,900	156*	.....	.....	.....	s	36x5	36x5d	.....	own	4-4½x5½-32.4	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard	D	4	4,375	156*	.....	.....	.....	s	36x5	40x5d	.....	own	4-4½x5½-32.4	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard		5	4,900	.....	.....	.....	.....	s	.....	.....	.....	Str	4-5 x5½-40.0	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packard		6	5,100	.....	.....	.....	.....	.....	.....	.....	.....	.....	4-5 x5½-40.0	4	.....	.....	.....	dual	Dixie	hand	s&l	Bijur	.....	cent	own	mot
Packet		½	300	100	.....	rol-I	s-flx	pnu	28x3	28x3	wd	own	4-2¾x4 -12.1	4	ther	own	zz-t-sh	sing	A-K	auto	.....	.....	.....	.....	.....	
Palmer		1	1,585	132	P&B	p-stl	.....	opt	34x3½	34x4	wd	Con	4-3½x5 -22.50	4	cent	Fed	cel-cst	dual	Bosch	fix	.....	.....	.....	.....	Pierce	mot
Palmer		2	2,275	144	P&B	p-stl	.....	s	36x3½	36x4d*	wd	Con	4-4½x5½-27.23	4	cent	Fed	cel-cst	dual	Bosch	fix	.....	.....	.....	.....	Pierce	mot
Peerless	TC	2	3,000	145	own	rol-c	s-flx	s	36x4	36x4d	wd	own	4-4½x6½-32.4	2	gear	own	fin-cst	dual	Remy	hand	ltg 2	G&D	.....	cent	own	mot
Peerless	TC	3	3,700	151	own	rol-c	rigid	s	36x4	40x4d	wd	own	4-4½x6½-32.4	2	gear	own	fin cst	dual	Remy	hand	ltg 2	G&D	.....	cent	own	mot
Peerless	TC	4	4,000	151	own	rol-c	rigid	s	36x5	40x5d	wd	own	4-4½x6½-32.4	2	gear	own	fin-cst	dual	Remy	hand	ltg 2	G&D	.....	cent	own	mot
Peerless	TC	5	4,500	151	own	rol-c	rigid	s	38x6	42x6d	wd	own	4-4½x6½-32.4	2	gear	own	fin-cst	dual	Remy	hand	ltg 2	G&D	.....	cent	own	mot
Peerless	TC	6	5,000	151	own	rol-c	s-flx	s	38x7	42x7d	wd	own	4-4½x6½-32.4	2	gear	own	fin-cst	dual	Remy	hand	ltg 2	G&D	.....	cent	own	mot
Pierce-Arrow		2	3,300	150	own	p-stl	flex	s	36x4	36x4d	wd	own	4-4 x5½-25.6	2	cent	own	fin-cst	dual	Eismn	hand	s&l 2	opt	.....	cent	own	mot
Pierce-Arrow		5	5,000	168	own	p-stl	flex	s	36x5	40x6d	wd	own	4-4½x6 -38.0	2	cent	own	fin-cst	dual	Eismn	hand	s&l	opt	.....	cent	own	mot
Pull-More		3	3,400	153	.....	.....	.....	s	36x6	36x6	.....	Bud	4-4½x6 -32.4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Rainier	R	½	895	115	P&B	p-stl	rigid	pnu	32x3½	32x3½	wd	Lght	4-3½x4½-16.9	4	ther	Bush	fin-ps	sing	Spltf	hand	2	Bijur*	.....	.....	.....	
Rennoc-Leslie		2½	3,250	144	own	p-stl	s-flx	s	36x5	36x7	wd	Bud	4-4½x5½-27.2	4	cent	.....	fin-cst	dual	Spltf	hand	ltg	West	stk	cent	Pierce	mot
Rennoc-Leslie Tractor		3	3,250	116	own	p-stl	s-flx	s	36x5	36x7	wd	Bud	4-4½x5½-27.2	4	cent	.....	fin-cst	dual	Spltf	hand	ltg	West	stk	cent	Pierce	mot
Reo	F	¾	1,050	128	own	p-stl	rigid	pnu	34x4½	34x4½	wd	own	4-4½x4½-27.2	2	cent	own	fin-sht	sing	Remy	hand	sl&i 2	Remy	stk	none	none	
Reo	J	2	1,800	146	own	p-stl	rigid	s	36x4	36x3½d	wd	own	4-4½x4½-27.2	2	cent	own	fin-cst	dual	Natl	hand	sl&i 2	Remy	180	hyd	own	mot
Republic		.....	895c	110	Dtrt*	p-stl	s-flx	opt	32x4*	32x4*	wd	own	4-3½x5 -16.9	4	ther	own	sq-t-c	sing	Remy	fix	stg	Remy	stk	suct	Ruggles	mot
Republic		.....	895	128	Savg*	p-stl	s-flx	opt	32x4½*	33x5*	wd	own	4-3½x5 -16.9	4	ther	own	sq-t-c	sing	Eismn	fix	.....	.....	.....	suct	Ruggles	mot
Republic	10	1	1,195c	124	Dtrt*	p-stl	s-flx	s	34x3	34x4	wd	Con	4-3½x5 -19.6	4	ther	own	cel-cst	sing	Bosch	fix	.....	.....	.....	suct	Ruggles	mot
Republic	11	1½	1,450	144	Dtrt*	p-stl	s-flx	s	34x3½	34x5	wd	Con	4-3½x5 -22.5	4	ther	own	cel-cst	sing	Bosch	fix	.....	.....	.....	suct	Ruggles	mot
Republic	A	2	1,885	144	Savg*	p-stl	s-flx	s	34x4	34x6	wd	Bud	4-4½x5½-27.2	4	cent	own	cel-cst	sing	Bosch	fix	.....	.....	.....	suct	Ruggles	mot
Republic	T	3½	2,750	165	Savg*	p-stl	s-flx	s	36x5	36x5d	c-s	Bud	4-4½x5½-29.0	4	cent	own	cel-cst	sing	Bosch	hand	.....	.....	.....	suct	Ruggles	mot
Republic	V	5	4,250	160	.....	p-stl	s-flx	s	36x5	40x6d	c-s	Bud	4-4½x6 -32.4	4	cent	own	cel-cst	sing	Bosch	hand	.....	.....	.....	cent	Duplex	mot
Reya	18	1	995	117	.....	p-stl	rigid	pnu	31x4	31x4	wd	GBS	4-3½x4½-22.5	4	ther	Kunz	cel-ps	dual	Spltf	hand	sl&i 2	Dynt	stk	.....	.....	
Riker	B	3	3,900	150	Prsh	p-stl	rigid	s	36x5	36x5d	wd*	own	4-4½x6 -28.9	2	cent	own	fin-cst	dual	Bosch	hand	s&l 2	West	250	l-b	own	mot
Riker	BB	4	4,050	150	Prsh	p-stl	rigid	s	36x5	36x6d	wd*	own	4-4½x6 -28.9	2	cent	own	fin-cst	dual	Bosch	hand	s&l 2	West	250	l-b	own	mot
Rowe	CDW	2	2,800	142	own	rol-c	.....	s	34x4	36x3½*	wd	.....	4-4 x5 -25.6	4	cent	.....	.....	.....	Bosch	.....	.....	.....	.....	.....	.....	
Rowe	CDW	2½	3,000	164	own	rol-c	.....	s	34x4	36x4*	wd	.....	4-4 x5 -25.6	4	cent	.....	.....	.....	Bosch	.....	.....	.....	.....	.....	.....	
Rowe	DEW	3½	3,400	156	own	rol-c	.....	s	36x5	36x5d	wd	.....	4-4 x6 -25.6	2	cent	.....	.....	.....	Bosch	.....	.....	.....	.....	.....	.....	
Rowe	GW	5	4,500	171	own	rol-c	.....	s	36x6	36x6d	wd	.....	4-4½x5½-36.2	2	cent	.....	.....	.....	Bosch	.....	.....	.....	.....	.....	.....	
Royal		1	.....	124*	.....	.....	.....	s	34x4	34x5	.....	Wis	4-3½x5 -16.9	4	.....	.....	.....	sing	Bosch	fix	.....	.....	.....	suct	Mnrch	mot
Royal		2	.....	132*	.....	.....	.....	s	36x4½	36x6	.....	Wis	4-4 x6 -25.6	4	.....	.....	.....	sing	Bosch	fix	.....	.....	.....	suct	Mnrch	mot
Royal		3½	.....	158*	.....	.....	.....	s	36x5	38x5d	.....	Wis	4-4½x6 -29.0	4	.....	.....	.....	sing	Bosch	fix	.....	.....	.....	suct	Mnrch	mot

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
flx—fixed
flex—flexible
fric—friction
gset—gearset
grav—gravity
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square tube core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk in oil
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag tube core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Continued

ENGINE				TRANSMISSION											BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE							STEERING GEAR					
Motor in R. P. M.	Truck in M.p.h.	Carbureter Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Make Springs	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
1,280	18	Mastr*	grav.	d-d	own.	selec	own.	amid.	4	worm	Timkn	7.0	r-rd	spgs	own.	int-r-w	int-r-w	l.	Ross	c.			Moreland
1,090	18	Mastr*	grav.	d-d	own.	selec	own.	amid.	4	worm	Timkn	6.8	r-rd	spgs	own.	int-r-w	int-r-w	l.	Ross	c.			Moreland
		Mastr*	grav.	d-d	B-Lipe	selec	B-Lipe	amid.	4	worm	Timkn	7.8	r-rd	spgs	own.	int-r-w	int-r-w		Ross	c.			Moreland
		Mastr*	grav.	d-d	B-Lipe	selec	B-Lipe	amid.	4	worm	Timkn	10.25	r-rd	spgs	own.	int-r-w	int-r-w	l.	Ross	c.			Moreland
1,230	16	Stewrt.	grav.	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	8.0	spgs	spgs		int-r-w	ext-r-w	l.	Lavn	c.	metl	Arvac	Muskegon 20
1,345	20	Stmbg.	grav.	d-p	B-Beck	selec	Dtrt	mtr	3	in-g	Buch	6.8	spgs	spgs		ext-d-s	ext-r-w	l.	Jacx	c.		own	Nash 2017
1,191	15	Stmbg.	grav.	d-p	B-Beck	selec	own	amid.	4	in-g	own	8.5	spgs	spgs	Mthr	ext-d-s	int-4-w	l.	Lavn	c.		own	Nash 4017
1,100	18	Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	7.0	spgs	spgs	Tut	int-r-w	int-r-w	r.	Lavn	c.			Nelson & LeMoon E
1,100	18	Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	7.0	spgs	spgs	Tut	int-r-w	int-r-w	r.	Lavn	c.			Nelson & LeMoon E
1,100	14	Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	4	worm	Timkn	8.75	spgs	spgs	Tut	int-r-w	ext-r-w	r.	Lavn	c.			Nelson & LeMoon E
1,050	11	Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	4	worm	Timkn	11.33	spgs	spgs	Tut	int-r-w	int-r-w	r.	Lavn	c.			Nelson & LeMoon
1,800		Zenith	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	8.5	spgs	spgs	Perf	int-r-w	int-r-w	l.	Ross	c.	metl	Hart	Netco D
1,400	18	Stmbg.	grav.	d-p		id-c		mtr	3	worm		7.7	r-rd	spgs		int-r-w	int-r-w						New York M
1,100	15	Stmbg.	grav.	d-p		id-c		mtr		worm			r-rd	spgs		int-r-w	int-r-w						New York N
1,573	25	Stmbg.	grav.	d-d	Covert	selec	Covert	mtr	3	worm	Timkn	6.5	spgs	spgs		int-r-w	int-r-w		Gem				Niles B
1,173	15	Stmbg.	grav.	d-p	B-Beck	selec	Covert	amid.	3	worm	Timkn	8.5	r-rd	spgs		int-r-w	int-r-w		Gem				Niles E
1,300	16	Stmbg.			B-Beck		Cotta		3	worm	Shel	8.75			Kal				Ross		metl	Blood	Noble NW
1,900	20	Carter	grav.	cone	Lyc	selec	G-Lees	mtr	3	bevel	Salby	6.0	t-tb	t-tb	Tut	int-r-w	ext-r-w	l.	CAS	c.			Old Hickory M
		Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm		7.7	spgs	spgs		int-r-w	int-r-w		Ross		metl	Spicer	Old Reliable
		Stmbg.	grav.	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Shel	7.7	spgs	spgs		int-r-w	int-r-w		Ross		metl	Spicer	Old Reliable
		Stmbg.	grav.			selec	DSOC	jst	3	chn	SA&P		r-rd			int-r-w	ext-j-s		Ross		metl	Hart	Old Reliable
		Stmbg.	grav.	d-d		selec	B-Lipe	mtr	3	worm	Shel	8.7	spgs	spgs		int-r-w	int-r-w		Ross		metl	Spicer	Old Reliable
		Stmbg.	grav.	d-d		selec	B-Lipe	amid.	4	worm	Shel	8.7	spgs	spgs		int-r-w	int-r-w		Ross		metl	Spicer	Old Reliable
		Stmbg.	grav.	d-d		selec		amid.	3	chn	Shel		r-rd			ext-	int-		Ross		metl	Hart	Old Reliable
		Stmbg.	grav.	d-d	D-Seab	selec		amid.	3	chn			r-rd			ext-r-w	int-j-s				metl	Hart	Old Reliable
		Stmbg.	grav.	d-d		selec		jst	4	chn			r-rd			int-r-w	ext-j-s				metl	Hart	Old Reliable
980	16	Stmbg.	grav.	w-d	M-Evn	id-c	Cotta	amid.	3	worm	Timkn	8.7	r-rd	spgs	Mthr	int-r-w	int-r-w	l.	Ross	c.	metl	Spicer	Oneida A
1,040	15	Stmbg.	grav.	w-d	M-Evn	id-c	Cotta	amid.	3	worm	Timkn	9.2	r-rd	spgs	Mthr	int-r-w	int-r-w	l.	Ross	c.	metl	Spicer	Oneida B
970	14	Stmbg.	grav.	w-d	M-Evn	id-c	Cotta	amid.	3	worm	Timkn	9.2	r-rd	spgs	Mthr	int-r-w	int-r-w	l.	Ross	c.	metl	Spicer	Oneida C
1,150	12	Stmbg.	grav.	w-d	M-Evn	id-c	Cotta	amid.	3	worm	Timkn	10.3	r-rd	spgs	Mthr	int-r-w	int-r-w	l.	Ross	c.	metl	Spicer	Oneida D
		Tiltsn	vacm.	cone	own	selec	own	r-ax	3	bevel	own	4.3	t-tb	t-tb	Perf	int-r-w	ext-r-w	l.	own	c.			Overland
		Tiltsn	grav.	cone	own	selec	own	r-ax	3	bevel	own	4.4	t-tb	t-tb	Perf	int-r-w	ext-r-w	l.	own	c.			Overland
1,000	16	own	pres.	d-d	own	selec	own	amid.	4	worm	own	6.2	r-rd	tor-a		int-r-w	ext-sht		own				Packard D
1,000	16	own	pres.	d-d	own	selec	own	amid.	4	worm	own	6.2	r-rd	tor-a		int-r-w	ext-sht		own				Packard D
1,000	14	own	pres.	d-d	own	selec	own	amid.	4	worm	own	7.2	r-rd	tor-a		int-r-w	ext-sht		own				Packard D
1,000	12	own	pres.	d-d	own	selec	own	amid.	4	worm	own	9.0	r-rd	tor-a		int-r-w	ext-sht		own				Packard D
1,000	12	own	pres.	d-d	own	selec	own	amid.	4	worm	own	10.0	r-rd	tor-a		int-r-w	ext-sht		own				Packard D
1,000	11	own	pres.	d-d	own	selec	own	amid.	4	worm	own	10.7	r-rd	tor-a		int-r-w	ext-sht		own				Packard
1,000	11	own	pres.	d-d	own	selec	own	amid.	4	worm	own	10.7	r-rd	tor-a		int-r-w	ext-sht		own				Packard
1,500	25	Carter	grav.		own	fric	own	jst	3	chn	own	4.0	r-rd		Tut	r-w	int-	l.	own	l.			Packet
		Stmbg.	grav.	w-d	Fuller	prog	Fuller			in-g	Torb		r-rd	tor-t	Chmp	int-r-w			Ross		metl	Blood	Palmer
1,000	15	Stmbg.	grav.	w-d	Fuller	prog	Fuller			worm	Timkn		r-rd	tor-t	Chmp	int-r-w			Ross		metl	Blood	Palmer
925	16	Stmbg.	grav.	cone	own	selec	B-Lipe	amid.	3	worm	Timkn	6.2	spgs	spgs	Std	int-r-w	ext-r-w	r.	own	r.	metl	Spicer*	Peerless TC
925	15	Stmbg.	grav.	cone	own	selec	own	jst	4	chn	own	7.4	r-rd		Std	int-r-w	ext-j-s	r.	own	r.	metl	Spicer*	Peerless TC
925	13	own	grav.	cone	own	selec	own	jst	4	chn	own	8.6	r-rd		own	int-r-w	ext-j-s	r.	own	r.	metl	Spicer*	Peerless TC
925	11	Stmbg.	grav.	cone	own	selec	own	jst	4	chn	own	10.4	r-rd		own	int-r-w	ext-j-s	r.	own	r.	metl	Spicer*	Peerless TC
925	11	Stmbg.	grav.	cone	own	selec	own	jst	4	chn	own	10.4	r-rd		own	int-r-w	ext-j-s	r.	own	r.	metl	Spicer*	Peerless TC
1,050	16	own	grav.	cone	own	selec	own	amid.	4	worm	own		r-rd	tor-a	own	int-r-w	ext-d-s	r.	own	r.		own	Pierce-Arrow
950	14	own	grav.	cone	own	selec	own	amid.	3	worm	own		r-rd	tor-a	own	int-r-w	ext-d-s	r.	own	r.		own	Pierce-Arrow
1,050	12				B-Beck		Warner					9.9											Pull-More
		Zenith	vacm.	d-p	B-Beck	selec	G-Lees	mtr	3	worm	Timkn	5.8	spgs	spgs	Perf	int-r-w	int-r-w	l.	Lavn	r.	metl	Arvac	Rainier R
1,200	18	Stmbg.	vacm.	d-d	Warner	selec	Warner	amid.	4	worm	Wis	8.6	spgs	spgs	Rowl	int-r-w	int-r-w	l.	Lavn	c.	metl	Hart	Rennoc-Leslie
1,200	18	Stmbg.	vacm.	d-d	Warner	selec	Warner	amid.	4	worm	Wis	8.6	spgs	spgs	Rowl	int-r-w	int-r-w	l.	Lavn	c.	metl	Hart	Rennoc-Leslie Tractor
		Jhnson	grav.	d-d	own	selec	own	amid.	3	bevel	own	4.3	spgs	tor-a	Penn		dual-rw	l.	own		fab*	Roid*	Reo F
1,250	14	Jhnson	grav.	d-d	own	selec	own	amid.	3	chn	own	8.8	r-rd		Penn	ext-r-w	ext-j-s	l.	own	c.	fab*	Roid*	Reo J
900	20	Marvel	grav.	d-d	Covert	selec	Covert	mtr	3	in-g	Torb	5.4	spgs	spgs	Dtrt	ext-sht	ext-r-w	l.	Jacx	c.	metl	Univ	Republic
900	17	Marvel	grav.	d-d	Covert	selec	Covert	mtr	3	in-g	Torb	6.7	spgs	spgs	Dtrt	ext-sht	ext-r-w	l.	Jacx	c.	metl	Univ	Republic
950	17	Stmbg.	grav.	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	7.2	spgs	spgs	Dtrt	int-r-w	ext-r-w	l.	Jacx	c.	metl	Arvac	Republic 10
980	15	Stmbg.	grav.	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	8.0	spgs	spgs	Dtrt	int-r-w	ext-r-w	l.	Jacx	c.	metl	Arvac	Republic 11
980	12	Stmbg.	grav.	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	8.0	spgs	spgs	Dtrt	int-r-w	ext-r-w	l.	Jacx	c.	metl	Arvac	Republic A
1,050	11	Stmbg.	grav.	d-d	Muncie	selec	Muncie	mtr	4	in-g	Clfr	10.0	spgs	spgs	Shel	int-r-w	ext-r-w	l.	Ross	c.	metl	K-B	Republic T
1,021	10	Zenith	grav.	d-d	B-Beck	selec	B-Beck	amid.	4	in-g	Clfr	12.5	spgs	spgs	Shel	int-r-w	int-r-w	l.	Ross	c.			Republic V
		Schblr	grav.	w-d		selec		mtr	3	bevel	Peru	4.7	spgs	spgs	Kal	int-r-w	ext-r-w	l.	Gem	c.			Reya 18
1,350	14	Ball	grav.	cone	own	selec	own	amid.	4	worm	own	10.0	r-rd	tor-a	S-P	int-r-w	ext-d-s	r.	Ross	r.		own	Riker B
1,350	14	Ball	grav.	cone	own	selec	own	amid.	4	worm	own	10.0	r-rd	tor-a	S-P	int-r-w	int-d-s	r.	Ross	r.		own	Riker BB
	15	Rayfld*	grav.	d-d		selec		mtr	4	worm								l.		c.	metl	M-E	Rowe CDW
	15	Rayfld*	grav.	d-d		selec		mtr	4	worm								l.		c.	metl	M-E	Rowe CDW
	12	Rayfld*	grav.	d-d		selec		mtr	4	worm								l.		c.	metl	M-E	Rowe DEW
	10	Rayfld*	grav.	d-d		selec		mtr	4	worm								l.		c.	metl	M-E	Rowe GW
*1,600	25*	Master	grav.	d-p		id-c		amid.	3	worm	Shel*		spgs	spgs		int-r-w	int-r-w		Ross				Royal
1,600	18	Master	grav.	d-p		id-c		amid.	3	worm	Shel*		spgs	spgs		int-r-w	int-r-w		Ross				Royal
1,600	15	Master	grav.	d-p		id-c		amid.	3	worm	Timkn*		spgs	spgs		int-r-w	int-r-w		Ross				Royal

ABBREVIATIONS—Makers of Parts

*Other Options
A-K—Atwater-Kent
Aut-L—Auto-Lite
B-Beck—Borg & Beck
B-Lipe—Brown-Lipe
Brm—Bremer
Bud—Buda
Brem—Bremer
Can—Candler
Celfr—Celfor
Chgo—Chicago
Con—Continental
Conn—Connecticut
Dtrt—Detroit
Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Salsby—Salisbury
Savg—Savage Arms
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sunderman
S_W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE																
							Sizes in Ins.								COOLING			IGNITION			ELEC. SYSTEM			GOVERNOR		
				Make	Material	Type	Kind	Front	Rear		Make	No. Cyl. Bore and Stroke—N.A.C.C., Hp.	Cylinders Cast	Water Circ.	Radiator Make	Radiator Core and Case	Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make	Drive
Royal	5	.....	168*	.....	.....	.....	s....	36x6	40x6d	....	Wis..	4-4½x5½-36.2	2	.....	.....	.....	sing..	Bosch.	fix..	.....	.....	.....	suct..	Mnrch..	motor.
Royal	6	.....	158*	.....	.....	.....	s....	36x6	40x6d	....	Wis..	4-5½x6*-42.2*	2	.....	.....	.....	sing..	Bosch.	fix..	.....	.....	.....	suct..	Mnrch..	motor.
Royal	7	.....	158*	.....	.....	.....	s....	36x7	40x7d	....	Wis..	4-5½x7 -44.2	2	.....	.....	.....	sing..	Bosch.	fix..	.....	.....	.....	suct..	Mnrch..	motor.
Rush	D	½	895	105	.....	.....	.....	pnu..	31x4	31x4	....	Lyc..	4-3½x5 -16.9	4	.....	.....	.....	sing..	Conn..	hand.	s&l...	Spltf..	....	.....	.....	.....
Sandow	A	1	1,485	120	.....	p-stl..	flex..	opt..	31x4	34x4	wd..	Con..	4-3½x5 -19.6	4	ther....	Brem	cel-cst...	sing..	Eismn	auto.	.....	.....	.....	.....	.....	.....
Sandow	B	2	2,450	165	.....	p-stl..	s-flx..	s....	36x5	36x5d	wd..	Con..	4-4½x5½-27.2	4	ther....	Brem	fin-sht...	sing..	Bosch.	auto.	.....	.....	.....	suct..	Mnrch..	motor.
Sandow	B	1½	1,875	138	.....	p-stl..	.....	s....	34x4	34x5	....	Con..	4-3½x5 -19.6	4	ther....	.....	.....	.....	.....	auto.	.....	.....	.....	.....	.....	.....
Sandow	E	3½	3,450	175*	.....	rol-c..	.....	s....	36x5	36x5d	wd..	Con..	4-4½x5½-32.4	....	cent....	.....	.....	sing..	Bosch.	.....	.....	.....	.....	suct..	.....	motor.
Sanford	W15	1½	2,200	140	Prsh..	p-stl..	s-flx..	s....	36x3½	36x5	wd..	Con..	4-3½x5½-22.5	4	cent...	M'C.	fin-cst...	sing..	Bosch.	fix...	sl&i 2.	Remy.	stk..	cent..	Pierce...	motor.
Sanford	W25	2½	2,800	156	Prsh..	p-stl..	s-flx..	s....	36x4	36x4d	wd..	Con..	4-4½x5½-27.2	4	cent...	M'C.	fin-cst...	sing..	Bosch.	fix...	none..	none..	.....	cent..	Pierce...	motor.
Sanford	W35	3½	3,600	174	Prsh..	p-stl..	s-flx..	s....	36x5	36x5d	wd..	Bud..	4-4½x6 -32.4	4	cent...	M'C.	fin-cst...	sing..	Bosch.	fix...	none..	none..	.....	cent..	Pierce...	motor.
Schleicher		3	3,500	150*	.....	.....	.....	s....	34x4½	34x3½d	....	Con..	4-4½x5½-29.0	2	.....	.....	.....	.....	Bosch.	hand.	.....	.....	.....	.....	opt.	.....
Schleicher		5	4,500	150*	.....	.....	.....	s....	34x5	34x4d	....	Con..	4-5 x6 -40.0	2	.....	.....	.....	.....	Bosch.	hand.	.....	.....	.....	.....	.....	.....
Selden	G	4½	.....	110	P&B..	p-stl..	s-flx..	pnu..	32x3½	33x4	wd..	LeR..	4-3½x4½-15.6	4	ther....	Bush.	fin-sht...	sing..	Eismn	fix...	s&l 2..	A-C...	opt.	cent..	LeR....	motor.
Selden	TXL	1	.....	140	P&B..	p-stl..	s-flx..	s....	34x3	34x4	wd..	Con..	4-3½x5 -19.6	4	ther....	Bush.	fin-sht...	sing..	Bosch.	fix...	s&l 2..	N-E..	opt.	cent..	Pierce...	motor.
Selden	B	2	.....	162	P&B..	p-stl..	s-flx..	s....	36x4	36x6	wd..	Con..	4-4½x5½-27.2	4	cent...	Bush.	fin-sht...	sing..	Bosch.	fix...	s&l 2..	N-E..	opt.	cent..	Pierce...	motor.
Selden	BR	2½	.....	162	P&B..	p-stl..	s-flx..	s....	36x4	36x6	wd..	Con..	4-4½x5½-27.2	4	cent...	Bush.	fin-sht...	sing..	Bosch.	fix...	s&l 2..	N-E..	opt.	cent..	Pierce...	motor.
Selden	C	3½	.....	180	P&B..	p-stl..	s-flx..	s....	36x5	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Bush.	fin-cst...	sing..	Eismn	hand.	s&l 2..	N-E..	opt.	cent..	Pierce...	motor.
Selden	D	5	.....	169	P&B..	p-stl..	s-flx..	s....	36x6	40x6d	met.	Con..	4-4½x5½-36.1	2	cent...	Bush.	fin-cst...	sing..	Eismn	hand.	s&l 2..	N-E..	opt.	cent..	Pierce...	motor.
Service	220	1	1,500	137	.....	p-stl..	s-flx..	opt..	34x3	34x4	wd..	Bud..	4-4½x5½-19.6	4	ther....	Long.	fin-cst...	sing..	Eismn	hand.	s&l 2*.	West*.	120*	none..	none..	none.
Service	230	1½	2,200	150	.....	p-stl..	s-flx..	s....	36x3½	36x5	wd..	Bud..	4-4 x5½-25.6	4	cent...	Long.	fin-cst...	sing..	Eismn	hand.	s&l 2*.	West*.	140*	cent..	Duplex..	motor.
Service	240	2	2,500	160	.....	p-stl..	s-flx..	s....	36x4	36x7	wd..	Bud..	4-4½x5½-28.9	4	cent...	Long.	fin-cst...	sing..	Eismn	hand.	s&l2*..	West*.	140*	cent..	Duplex..	motor.
Service	270	3½	3,300	171	.....	p-stl..	s-flx..	s....	36x5	36x5d	wd..	Bud..	4-4½x5½-28.9	4	cent...	Long.	fin-cst...	sing..	Eismn	hand.	s&l 2*.	West*.	140*	cent..	Duplex..	motor.
Service	275	3½	3,600	171	.....	p-stl..	s-flx..	s....	36x6	36x6d	wd..	Bud..	4-4½x6 -32.4	4	cent...	Long.	fin-cst...	sing..	Eismn	auto.	s&l 2*.	West*.	140*	cent..	Duplex..	motor.
Service	300	5	4,300	171½	.....	p-stl..	s-flx..	s....	36x6	40x6d	wd..	Bud..	4-4½x6 -32.4	4	cent...	Long.	fin-cst...	sing..	Eismn	auto.	s&l 2*.	West*.	140*	cent..	Duplex..	motor.
Signal	F	1½	1,875	144	Prsh..	p-stl..	s-flx..	s....	34x3½	36x5	wd..	Con..	4-3½x5½-22.5	4	cent...	M'C.	fin-cst...	sing..	Eismn	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Signal	H	2	2,375	144	Prsh..	p-stl..	s-flx..	s....	34x4	36x6	wd..	Con..	4-4½x5½-27.2	4	cent...	M'C.	fin-cst...	sing..	Eismn	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Signal	J	2½	2,835	150	Prsh..	p-stl..	s-flx..	s....	34x4	36x8	wd..	Con..	4-4½x5½-27.2	4	cent...	M'C.	fin-cst...	sing..	Eismn	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Signal	M	4	3,825	168	Prsh..	p-stl..	s-flx..	s....	36x5	40x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	M'C.	fin-cst...	sing..	Eismn	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Signal	R	5	4,475	180	Prsh..	p-stl..	s-flx..	s....	36x6	40x6d	wd..	Con..	4-4½x5½-32.4	2	cent...	M'C.	fin-cst...	sing..	Eismn	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Standard	70	2	2,500	140	.....	rol-c..	s-flx..	s....	36x4	36x5	wd..	Con..	4-4½x5½-27.2	4	cent...	Long.	fin-cst...	sing..	Eismn	fix...	.....	.....	.....	cent..	Pierce...	motor.
Standard	65	3½	3,200	156	.....	rol-c..	s-flx..	s....	36x5	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Long.	fin-cst...	sing..	Eismn	auto.	.....	.....	.....	cent..	Pierce...	motor.
Standard	85	5	4,000	156	.....	rol-c..	s-flx..	s....	36x6	40x6d	wd..	Con..	4-4½x5½-32.4	2	cent...	Long.	fin-cst...	sing..	Eismn	auto.	.....	.....	.....	cent..	Pierce...	motor.
Steele	C	2	2,250	115*	.....	.....	.....	s....	38x5	40x4d	....	Con..	4-4½x5½-27.2	4	.....	.....	.....	sing..	A-Kt..	auto.	ltg....	Carl..	.....	cent..	own.....	motor.
Steele	B	3	3,000	127*	.....	.....	.....	s....	38x6	40x5d	....	own..	4-5 x5 -40.0	2	.....	.....	.....	sing..	A-Kt..	auto.	ltg....	Carl..	.....	cent..	own.....	motor.
Steele	BA	4	3,500	127*	.....	.....	.....	s....	38x6	40x5d	....	own..	4-5 x5 -40.0	2	.....	.....	.....	sing..	A-Kt..	auto.	ltg....	Carl..	.....	cent..	own.....	motor.
Steele	A	5	4,000	127*	.....	.....	.....	s....	38x7	40x6d	....	own..	4-5 x5 -40.0	2	.....	.....	.....	sing..	A-Kt..	auto.	ltg....	Carl..	.....	cent..	own	motor.
Stegeman		2	2,600	150	own..	p-stl..	flex..	s....	34x4	36x4d	wd..	Con..	6-3½x5½-29.4	4	cent...	Bush.	s-t-cst...	sing..	Dixie..	fix...	s&l 2..	West..	stk..	suct..	Mnrch..	motor.
Stegeman		3	3,000	160	own..	p-stl..	flex..	s....	34x4	36x5d	wd..	Con..	6-3½x5½-29.4	4	cent...	Bush.	s-t-cst...	sing..	Dixie..	fix...	s&l 2..	West..	stk..	suct..	Mnrch..	motor.
Stegeman		4	3,800	160	own..	p-stl..	flex..	s....	36x5	40x5d	wd..	Con..	6-3½x5½-33.8	3	cent...	Bush.	s-t-cst...	sing..	Dixie..	fix...	s&l 2..	West..	stk..	suct..	Mnrch..	motor.
Stegeman		5	4,500	168	own..	p-stl..	flex..	s....	36x5	40x6d	wd..	H-S..	6-4 x5½-38.4	4	cent...	Bush.	s-t-cst...	sing..	Dixie..	fix...	s&l 2..	West..	stk..	suct..	Mnrch..	motor.
Stegeman		7	5,000	168	own..	rol-c..	flex..	s....	36x6	40x7d	c-s..	H-S..	6-4 x5½-38.4	4	cent...	Bush.	s-t-cst...	sing..	Dixie..	fix...	s&l 2..	West..	stk..	suct..	Mnrch..	motor.
Sterling		2½	2,950	156	Smth..	p-stl..	s-flx..	s....	36x4	36x4d	wd..	Wau..	4-4½x5½-28.9	2	cent...	Long.	fin-cst...	sing..	Eismn	auto.	none..	none..	none	cent..	Wau....	motor.
Sterling		3½	3,900	162	Smth..	p-stl..	s-flx..	s....	36x5	40x5d	wd..	Wau..	4-4½x6½-28.9	2	cent...	Long.	fin-cst...	dual..	Eismn	auto.	ltg....	Vesta.	stk..	cent..	Wau....	motor.
Sterling		5	4,750	168	Smth..	p-stl..	s-flx..	s....	36x6	40x6d	wd..	Wau..	4-4½x6½-36.1	2	cent...	Long.	fin-cst...	sing..	Eismn	auto.	ltg....	Vesta.	stk..	cent..	Wau....	motor.
Sterling		7	5,250	168	Smth..	p-stl..	s-flx..	s....	36x6	40x7d	wd..	Wau..	4-4½x6½-36.1	2	cent...	Long.	fin-cst...	dual.	Eismn	hand.	ltg....	Vesta.	stk..	cent..	Wau....	motor.
Stewart	6	¾	845	110	.....	p-stl..	s-flx..	pnu..	32x4	32x4	wd..	Mil..	4-3½x4½-14.4	4	ther....	Bush.	fin-ps...	sing..	Brlng.	fix...	.....	.....	.....	.....	.....	.....
Stewart	9	1½	1,750	140	.....	p-stl..	.....	s....	34x3½	34x4	....	Con..	4-3½x5 -22.5	4	ther....	Bush.	fin-cst...	sing..	Brlng.	fix...	-2..	West*.	125*	.....	.....	.....
Stewart	7	2	2,195	156	.....	p-stl..	.....	s....	34x4	34x4d	wd..	Bud..	4-4½x5½-27.2	4	cent...	Bush.	fin-cst...	sing..	Brlng.	fix...	.....	.....	.....	.....	Pierce...	.....
Studebaker	SF	½	945	112	own..	p-stl..	s-flx..	pnu..	35x4½	35x4½	wd..	own..	4-3½x5 -24.2	4	cent...	M'C.	cel-ps...	sing..	Remy.	hand.	sl&i 2.	Wag..	stk..	.....	.....	.....
Studebaker	7	1	1,350	125	own..	p-stl..	s-flx..	pnu..	35x5	35x5	wd..	own..	4-3½x5 -24.2	4	cent...	M'C.	cel-ps...	sing..	Remy.	hand.	sl&i 2.	Wag..	stk..	cent..	Pierce...	motor.
Sullivan	F	1½	2,150	129	.....	rol-c..	s-flx..	s....	36x3	36x5	wd..	Bud..	4-3½x4½-22.5	4	ther....	Bush.	fin-sht...	sing..	Bosch.	fix...	none..	none..	.....	none	none....	.....
Sullivan	E	2	2,600	150	.....	p-stl..	s-flx..	s....	36x4	36x6	wd..	Bud..	4-4½x5½-27.2	4	cent...	Bush.	fin-cst...	sing..	Bosch.	fix...	none..	none..	.....	none	none....	.....
Superior	A	1	1,500	124*	.....	.....	.....	s....	34x3½	34x4	....	Beav.	4-3½x5 -19.6	4	.....	.....	.....	sing..	Eismn	fix...	.....	.....	.....	suct..	Mnrch..	motor.
Superior	C	2	2,000	144	.....	.....	.....	s....	36x4	36x6	....	Beav.	4-3½x5 -22.5	4	.....	.....	.....	sing..	Eismn	fix...	.....	.....	.....	suct..	Mnrch..	motor.
Taylor		1	1,750	134	.....	p-stl..	s-flx..	s....	34x4	34x5	wd..	Con..	4-3½x5 -19.6	4	cent...	Long.	fin-cst...	sing..	Eismn	hand.	.....	.....	.....	cent..	Pierce...	gset...
Taylor		1½	2,200	142	.....	p-stl..	s-flx..	s....	34x4	34x6	wd..	Con..	4-3½x5 -22.5	4	cent...	Long.	fin-cst...	sing..	Eismn	hand.	.....	.....	.....	cent..	Pierce...	gset...
Taylor		2½	2,900	145	.....	p-stl..	s-flx..	s....	36x4	36x7	c-s.	Con..	4-4½x5½-27.2	4	cent...	Long.	fin-cst...	dual..	Eismn	hand.	.....	.....	.....	cent..	Pierce...	gset...
Taylor		3½	3,650	156	.....	p-stl..	s-flx..	s....	36x5	40x10	c-s.	Con..	4-4½x5½-32.4	4	cent...	Long.	fin-cst...	dual..	Eismn	hand.	.....	.....	.....	cent..	Pierce...	gset...
Taylor		5	4,600	160	.....	p-stl..	.....	s....	36x6	40x14	c-s.	Con..	4-5½x5½-44.2	2	cent...	Long.	fin-cst...	dual..	Eismn	hand.	.....	.....	.....	cent..	Pierce...	gset...
Thomas	40	2	3,000	150	.....	p-stl..	rigid.	s....	34x5	34x4d	wd..	Bud..	4-4½x5½-28.9	4	cent...	.....	fin*-sht...	sing..	Sims..	fix...	ltg....	Bijur..	stk..	cent..	Pierce...	gset...
Thomas	70	3½	3,500	150	.....	p-stl..	rigid.	s....	34x5	34x5d	wd..	Bud..	4-4½x6 -28.9	4	cent...	.....	fin*-sht...	sing..	Sims..	fix...	ltg....	Bijur..	stk..	cent..	Pierce...	gset...
Tiffin	A	¾	1,190	110	.....	p-stl..	flex..	pnu..	35x4½	35x4½	wd..	Con..	4-3½x5 -19.6	4	ther....	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	none	none....	none
Tiffin	AW	1	1,550	112	.....	p-stl..	flex..	s....	34x3	34x4	wd..	Con..	4-3½x5 -19.6	4	ther....	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	cent..	Pierce...	motor.
Tiffin	GW	1½	1,970	135	.....	p-stl..	flex..	s....	36x3½	36x5	wd..	Con..	4-3½x5½-22.5	4	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	cent..	Pierce...	motor.
Tiffin	MC	2½	2,500	140	.....	p-stl..	s-flx..	s....	36x4	36x3½d	wd..	Con..	4-4½x5½-27.2	4	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	cent..	Pierce...	motor.
Tiffin	MW	2½	2,700	140	.....	p-stl..	s-flx..	s....	36x4	36x3½d	wd..	Con..	4-4½x5½-27.2	4	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	cent..	Pierce...	motor.
Tiffin	PW	3½	3,400	156	.....	rol-c..	s-flx..	s....	36x5	36x5d	wd..	Con..	4-4½x5½-32.4	2	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	none..	none..	.....	cent..	Pierce...	motor.
Tiffin	RW	5	4,550	168	.....	rol-I..	rigid.	s....	36x5	40x5d	wd..	Con..	6-3½x5½-33.8	3	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	sl&i 2.	Spltf..	stk..	cent..	Pierce...	.....
Tiffin	SW	6	4,650	168	.....	rol-I..	rigid.	s....	36x6	36x6d	c-s.	Con..	6-3½x5½-33.8	3	cent...	Bush.	fin-sht...	sing..	Bosch.	hand.	sl&i2.	Spltf..	stk..	cent..	Pierce...	.....
Titan		5	5,000	156	.....	p-stl..	s-flx..	s....	36x6	40x6d	c-s.	Bud..	4-4½x6 -32.4	4	cent...	Perf..	cel-cst...	sing..	Bosch.	hand.	ltg....	Bosch.	stk..	cent..	Simplex.	motor.
Transport Tractor	T	5	2,750	80	.....	rol-c..	rigid.	s....	34x3½	34x4d	wd..	....	4-3½x5 -22.5	4	ther....	.....	cel-sht...	sing..	Bosch.	fix...	none..	none..	.....	suct..	Mnrch..	motor.
Triangle	A	1½	.....	144	.....	rol-c..	s-flx..	s....	34x3½	34x5	wd..	Wau..	4-3½x5½-22.5	4	cent...	.....	zz-t-...	sing..	Eismn	fix...	.....	.....	.....	cent..	Wau....	motor.

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
fix—fixed
d—dual
flex—flexible
fric—friction
gset—gearset
grav—gravity
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square tube core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk in oil
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag tube core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Continued

ENGINE				TRANSMISSION												BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE								STEERING GEAR					
Motor in R.p.m.	Truck in M.p.h.	Carbureter Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction	Propulsion Taken By	Torque Taken By	Make Springs	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
*900	10*	Master	grav	w-d		id-c		amid	3	worm	Timkn		spgs	spgs		int-r-w	int-r-w		Ross				Royal
*900	10*	Master	grav	w-d		id-c		amid	3	worm*	Shel*		spgs*	spgs*		int-r-w	int-r-w		Ross				Royal
*900	10*	Master	grav	w-d		id-c		amid	3	chn	Shel*		r-rd			int-r-w	int-r-w		Ross				Royal
1,800	29	Carter	grav	w-d	B-Beck	selec		mtr	3	bevl	own		spgs	tor-t		int-r-w	ext-r-w		Lavn				Rush D
		Stmbg	vacm	d-d	Fuller	selec	Fuller	mtr	3	worm	Timkn	6.5	spgs	spgs	Dtrt	int-r-w	int-r-w	l	Ross	c			Sandow A
1,100	15	Stmbg	vacm	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn		spgs	spgs	Dtrt	int-r-w	int-r-w	r	Ross	r			Sandow B
		Stmbg		d-d		selec			3	worm	Timkn	8.7				int-r-w	int-r-w	l		c			Sandow B
	12	Stmbg		d-d		selec		mtr	3	worm	Timkn	8.8				int-r-w	int-r-w			c			Sandow E
1,200	16½	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Shel	7.8	spgs	spgs	Perf	int-r-w	int-r-w	l	Ross	c	metl	Spicer*	Sanford W15
1,100	15	Stmbg	grav	d-p	B-Beck	selec	Dtrt	amid	4	worm	Shel	8.7	spgs	spgs	Perf	int-r-w	int-r-w	l	Ross	c	metl	Spicer*	Sanford W25
1,100	13	Stmbg	grav	d-p	B-Beck	selec	Warner	amid	4	worm	Shel	8.8	spgs	spgs	Perf	int-r-w	int-r-w	l	Ross	c	metl	Spicer*	Sanford W35
1,200	25	Stmbg	grav				own			chn	own		r-rd			ext-r-w	ext-sht						Schleicher
1,200	20	Stmbg	grav	cone		selec	own	amid	4	chn	own		r-rd			ext-r-w	ext-sht						Schleicher
1,260	20	Schblr	grav	d-d	Dtrt	selec	Dtrt	mtr	3	worm	Shel	6.2	spgs	spgs	Perf	int-r-w	int-r-w	r	Lavn	c	metl	Arvac	Selden G
1,250	15	Stmbg	grav	d-d	Covt	selec	Covt	mtr	3	in-g	Russl	8.2	spgs	spgs	Perf	int-r-w	ext-r-w	r	Lavn	c	metl	Spicer	Selden TXL
1,295	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	9.3	spgs	spgs	Perf	int-r-w	int-r-w	r	Jacx	c	metl	Spicer	Selden B
1,295	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	in-g	Russl	9.3	spgs	spgs	Perf	int-r-w	ext-r-w	r	Jacx	c	metl	Spicer	Selden BR
1,250	13	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	10.3	r-rd	spgs	Perf	int-r-w	int-r-w	r	Ross	c	metl	Spicer	Selden C
1,250	13	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	13.7	r-rd	spgs	Perf	int-r-w	int-r-w	r	Ross	c	metl	Spicer	Selden D
1,100	16	Stmbg	vacm	d-d	Fuller	selec	Fuller	mtr	3	worm	Timkn	7.8	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c	metl	Arvac	Service 220
1,200	15	Master	grav	d-p	B-Beck	selec	B-Lipe	amid	3	worm	Timkn	7.8	spgs	spgs	Kal	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Service 230
1,200	15	Master	grav	d-p	B-Beck	selec	B-Lipe	amid	3	worm	Timkn	7.8	spgs	spgs	Kal	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Service 240
1,100	13	Master	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn	8.8	r-rd	tor-a	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Service 270
1,000	13	Master	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn	7.8	r-rd	tor-a	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Service 275
1,000	12	Master	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn	10.3	r-rd	tor-a	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Service 300
1,085	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	7.8	r-rd	spgs	Perf*	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Signal F
1,300	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	9.3	r-rd	spgs	Perf*	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Signal H
1,300	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	9.3	r-rd	spgs	Perf*	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Signal J
1,300	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	10.3	r-rd	spgs	Perf*	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Signal M
1,300	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	13.7	r-rd	spgs	Perf*	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Signal R
1,721	15	Stmbg	grav	d-d	B-Lipe	selec	B-Lipe	amid	4	worm	Timkn	7.8	r-rd	spgs	Tut	int-r-w	int-r-w	l	Ross	c			Standard 70
1,050	15	Schblr	grav	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn	10.3	r-rd	spgs	Tut	int-r-w	int-r-w	l	Ross	c			Standard 65
1,050	12	Schblr	vacm	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn	13.2	r-rd	spgs	Tut	int-r-w	int-r-w	l	Ross	c			Standard 85
1,050	10	Schblr	vacm	d-p	B-Beck	selec	B-Lipe	amid	4	worm	Timkn												
1,150	14½	Stmbg		w-d	H-Shaw	id-c	Cotta	jst	3	chn	own	9.5	r-rd			int-	ext-		Ross				Steele C
950	11	Stmbg	grav	w-d	H-Shaw	id-c	Cotta	jst	3	chn	own	9.2	r-rd			int-	ext-		Ross				Steele B
950	11	Stmbg	grav	w-d	H-Shaw	id-c	Cotta	jst	3	chn	own	9.2	r-rd			int-r-w	ext-jst		Ross				Steele BA
950	9	Stmbg	grav		H-Shaw	id-c	Cotta	jst	3	chn	own	9.0	r-rd			int-r-w	ext-jst		Ross				Steele A
1,100	16	Rayfld	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	9.6	r-rd	spgs	Shel	int-r-w	int-dst	l	Ross	l	metl	M-Evn	Stegeman
1,100	14	Rayfld	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	10.7	r-rd	spgs	Shel	int-r-w	int-dst	l	Ross	l	metl	M-Evn	Stegeman
1,100	13	Rayfld	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	11.3	r-rd	spgs	Shel	int-r-w	int-dst	l	Ross	l	metl	M-Evn	Stegeman
1,100	12	Rayfld	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	12.7	r-rd	spgs	Shel	int-r-w	int-dst	l	Ross	l	metl	M-Evn	Stegeman
1,100	10	Rayfld	grav	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	own	15.0	r-rd	spgs	Shel	int-r-w	int-dst	l	Ross	l	metl	M-Evn	Stegeman
1,000	16	Zenith	vacm	d-d	B-Lipe	selec	Sterlg	mtr	3	worm	Shel	7.7	r-rd	spgs	Shel	int-r-w	int-r-w	l	Ross	c	metl	Spicer	Sterling
1,000	13*	Zenith	vacm	w-d	H-Shaw	ind-c	Cotta	amid	3	worm	Timkn	8.7	r-rd	spgs	Mathr	int-r-w	int-r-w	l	Ross	c	metl	Univ	Sterling
1,000	13*	Zenith	vacm	w-d	H-Shaw	ind-c	Sterlg	amid	3	worm	Timkn	8.7	r-rd	spgs	Mathr	int-r-w	int-r-w	l	Ross	c	metl	Univ	Sterling
950	12	Zenith	vacm	w-d	H-Shaw	ind-c	Sterlg	amid	3	chn	own	11.0	r-rd		Mathr	int-r-w	ext-dst	l	Ross	c	metl	Univ	Sterling
		Zenith	grav	d-d	Mech	selec	Mech	mtr	3	in-g	Clark	5.8	spgs	spgs	Dtrt		ext	l	CAS	c			Stewart 6
	15	Zenith		d-d	Fuller	selec	Fuller	mtr	3	in-g	Clark	7.0	spgs	spgs	Dtrt	ext-dst	ext-r-w	l	Ross	c			Stewart 9
1,500	15	Zenith	grav	d-d	Fuller	selec	Fuller	mtr	3	in-g	Clark	9.0	spgs	spgs	Dtrt	in-tr-w	ext-r-w	l	Ross	c			Stewart 7
		Schblr	vacm	cone	own	selec	own	r-ax	3	bevl	own	4.6	r-rd	tor-a	own	int-r-w	ext-r-w	l	Gem*	c	metl	own	Studebaker SF
960	20	Schblr	vacm	cone	own	selec	own	r-ax	3	bevl	own	5.0	r-rd	tor-a	own	int-r-w	ext-r-w	l	Gem	c	metl	own	Studebaker 7
		Holley	grav	cone	Hartfd	selec	Covert	amid	3	worm	Shel	8.5	spgs	spgs	Merl	int-r-w	int-r-w	l	Ross	c			Sullivan F
		Holley	vacm	d-d	B-Lipe	selec	B-Lipe	mtr	3	worm	Timkn	7.8	spgs	spgs	Shel	int-r-w	int-r-w	l	Ross	c			Sullivan E
1,300	15	Stmbg	vacm	d-d	Covert	selec	Covert	mtr	3	in-g	Torb	7.0	spgs	spgs		int-r-w	ext-r-w		CAS				Superior A
1,275	15	Stmbg	vacm	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	9.0	r-rd	spgs		int-r-w	ex-rt-w		CAS				Superior C
1,200	19	Zenith	vacm	d-p	B-Beck	selec	Covert	amid	3	worm	Timkn	7.8	r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c	fab*	ther*	Taylor
1,100	18	Zenith	vacm	d-p	B-Beck	selec	Covert	amid	4	worm	Timkn	7.8	r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c	fab*	ther*	Taylor
1,300	16	Zenith	vacm	d-p	B-Beck	selec	Covert	amid	4	worm	Timkn	8.8	r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c	fab*	ther*	Taylor
1,230	15	Zenith	vacm	d-p	B-Beck	selec	Covert	amid	4	worm	Timkn	8.8	r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c	fab*	ther*	Taylor
1,166	14	Zenith	vacm	d-p	B-Beck	selec	Covert	amid	4	worm	Timkn	10.2	r-rd	spgs	Perf	int-r-w	int-r-w	l	Ross	c	fab	ther*	Taylor
	15	Stmbg	grav	d-p	Fuller	selec	Fuller	mtr	3	worm	Timkn		spgs	spgs		int-r-w	int-	l	Ross	c			Thomas 40
	12	Stmbg	grav	d-p	Fuller	selec	Fuller	mtr	3	worm	Timkn		spgs	spgs		int-r-w	int-r-w	l	Ross	c			Thomas 70
		Schblr	grav	cone	Dtrt	selec	Dtrt	mtr	3	in-g	Russl	6.8	spgs	spgs	Kal	int-r-w	ext-r-w	l	Lavn	c			Tiffin A
1,000	15	Schblr	grav	d-d	Dtrt	selec	Dtrt	mtr	3	worm	Shel	6.5	spgs	spgs	Kal	int-r-w	int-r-w	l	Ditw	c			Tiffin AW
1,000	12	Schblr	grav	d-d	Warner	selec	Warner	mtr	3	worm	Shel	8.6	spgs	spgs	Kal	int-r-w	ext-	l	Ditw	c			Tiffin GW
1,000	11	Schblr	grav	cone	Hartfd	selec	Covert	amid	3	chn	Timkn	8.8	r-rd		Kal	int-r-w	ext-dst	l	Ditw	c			Tiffin MC
1,000	13	Schblr	grav	cone	Hartfd	selec	Covert	amid	3	worm	Timkn	7.7	spgs	spgs	Kal	int-r-w	int-r-w	l	Ditw	c			Tiffin MW
1,000	9	Schblr	grav	cone	Hartfd	selec	Covert	amid	3	worm		11.7	r-rd	spgs	Kal	int-r-w	int-r-w	l	Ross	c			Tiffin PW
1,000	10	Schblr	grav	d-p	B-Beck	selec	Covert	amid	3	worm	Shel	11.7	r-rd	spgs	Kal	int-r-w	int-r-w	l	Ross	c			Tiffin RW
1,000	9	Schblr	grav	d-p	B-Beck	selec	Covert	amid	3	worm	Shel	13.0	r-rd	Spgs	Kal	int-r-w	int-r-w	l	Ross	c			Tiffin SW
1,000	11		grav	d-p	B-Beck	ind-c	Cotta	amid	3	in-g	Celfr	11.0	r-rd	spgs	Shel	int-	int-	l	Lavn	c			Titan
		Zenith	grav	d-d		selec		mtr	4	worm			spgs	spgs		int-r-w	int-r-w	l		c			Transport Tractor T
1,200	15	Stmbg	grav	d-d	Fuller	selec	Fuller	mtr	3	in-g	Torb	8.0	spgs	spgs		ext-dst	ext-r-w	l	Gem	c			Triangle A

ABBREVIATIONS—Makers of Parts

*Other Options
A-K—Atwater-Kent
Aut-L—Auto-Lite
B-Beck—Borg & Beck
B-Lipe—Brown-Lipe
Blng—Berling
Brm—Bremer
Bud—Buda
Can—Candler
Celfr—Celfor
Chgo—Chicago
Con—Continental
Conn—Connecticut
Dtrt—Detroit
Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Savg—Savage Arms
Salsby—Salisbury
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sundermân
S-W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilcx—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of Gasoline

Name and Model	Tons Capacity	Chassis Price	Wheelbase, Inches	FRAME			TIRES			Wheels	ENGINE															
								Sizes in Ins.						COOLING			IGNITION			ELEC. SYSTEM			GOVERNOR		
				Make	Material	Type	Kind	Front	Rear		Make	No. Cyl. Bore and Stroke—N.A.C.C., Hp.	Cylinders Cast	Water Circ.	Radiator Make	Radiator Core and Case	Type	Make	Spark Advance	Type	Make	Extra Cost	Type	Make	Drive
Union B	2½	1,990	152		p-stl		s	39x4	39x6	wd	Wis	4-4 x6 -25.6	4	ther	R-T	fin-cst	sing	Eismn	hand	ltg	opt	75	cent	Simplex	d-sht
U. S. E	2	2,650	144	own	rol-c	flex	s	34x4	36x4d	wd	Con	4-4½x5½-27.2	4	cent	Bush	fin-sht	dual	Bosch	hand	ltg	Bosch	100	cent	Pierce*	motor
U. S. H	2	2,950	144	own	rol-c	flex	s	34x4	36x4d	wd	Con	4-4½x5½-27.2	4	cent	Bush	fin-sht	dual	Bosch	hand	ltg	Bosch	100	cent	Pierce*	motor
U. S. D	3½	3,350	162	own	rol-c	flex	s	36x5	36x5d	wd	Con	4-4½x5½-32.4	2	cent	Fed	zz-t-sht	dual	Bosch	hand	ltg	Bosch	100	cent	Pierce*	motor
U. S. J	3½	3,650	162	own	rol-c	flex	s	36x5	40x5d	wd	Con	4-4½x5½-32.4	2	cent	Fed	zz-t-sht	dual	Bosch	hand	ltg	Bosch	100	cent	Pierce*	motor
U. S. K	5	4,550	168	own	rol-c	flex	s	36x5	40x6d	c-s	Wau	4-4½x6½-36.1	2	cent	Bush	fin-sht	dual	Bosch	hand	ltg	Bosch	100	cent	Wau	motor
United F. W. D. B	3	4,000	130		rol-c	s-flx	s	36x7	36x7	wd	Bvr	4-4½x6 -34.3	4	cent	Chgo	fin-cst	dual	Eismn	hand	ltg 2	Bijur		cent	Duplex	motor
United BSW	2	2,350	144*				s	36x4	36x4d		Con	4-4½x5½-27.2	4	cent				Eismn	hand	s&l	opt		suct	Mnrch	motor
United CSW	3½	3,150	144*				s	36x5	36x5d		Con	4-4½x5½-32.4	2	cent				Eismn	hand	s&l	opt		suct	Mnrch	motor
United DSW	4	3,450	144*				s	36x5	36x6d		Con	4-4½x5½-32.4	2	cent				Eismn	hand	s&l	opt		suct	Mnrch	motor
United ESW	5	4,250	144*				s	36x6	40x6d		Wis	4-4½x5½-41.6	2	cent				Eismn	hand	s&l*	opt		cent	Pierce	dsht
United Tractor	6	2,490	110				s	34x3½	34x7		Bud	4-4½x5½-32.4	4	cent				Bosch							
Universal G	1½		133		p-stl	rigid		34x3½	34x5	wd	Bud	4-3½x5½-22.5	4	pist	Long	fin-cst	sing	Eismn	hand	ltg			suct	Mnrch	motor
Universal D	2		132		p-stl		s	36x5	36x4d	wd	own	4-4½x5½-28.9	4	cent	Long	fin-cst	sing	Eismn	hand	ltg		stk	suct*	Mnrch*	motor
Universal L	3½		156		rol-c		s	36x5	36x5d	wd	Bud	4-4½x5½-28.9	4	cent	Long	fin-cst	sing	Eismn	hand	ltg		stk	suct*	Mnrch*	motor
Velie 25A	2	2,750	150*	Smth	p-stl		s	36x4	36x7	wd	Con	4-4½x5½-27.2	4	cent	own	fin-cst	sing	Bosch	hand	stg	Remy		cent	Pierce	motor
Velie 26A	3½	3,600	172*	Smth	p-stl		s	36x5	40x5d	wd	Con	4-4½x5½-32.4	2	cent	own	fin-cst	sing	Bosch	hand				cent	Pierce	motor
Vim 21	½	765	108	Prsh	rol-c	s-flx	pnu	31x4	31x4	wd	own	4-3 x4½-14.4	4	ther	M'C	fin-sht	sing	Dixie	hand	ltg	Spltf		none	none	
Walter F	5	5,000	156		p-stl		s	40x6	40x6d	c-s	own	4-4½x6½-36.1	4	cent	own	fin-cst	sing	Eismn	fix	sl&i	West	stk	l-b	own	motor
Watson Tractor	5	4,050	80	own	rol-c		s	34x4s	36x5d	wd	Con	4-4½x5½-32.4	2	cent	Fed	cel-sht	dual	Bosch	hand	none	none		cent	Pierce	motor
Ware	3½	4,000	140		p-stl	s-flx	s	36x6	36x6	wd		4-5½x6 -42.2	2	cent			dual	Bosch	hand	ltg*	Bosch		cent	Pierce	motor
Western	7	4,600	146	own	rol-c	s-flx	s	36x7	40x7d	c-s	Wis	4-4½x5½-36.1	2	cent	own	s-t-cst	sing	Bosch	hand	ltg	Vesta	75	cent	Simplex	gset
White GBBE	¾	2,300	133		p-stl		pnu	34x4½		wd	own	4-3½x5½-22.5	4	cent		cel-sht	sing	Eismn	hand	s&l	opt			none	
White TBC	1½	3,300	145		p-stl		p&s	36x3½	36x3½d	wd	own	4-3½x5½-22.5	4	cent		cel-sht	sing	Eismn	hand	s&l	opt			none	
White TAD	3	4,100	163		rol-I	rigid	s	36x5	40x5d	c-s	own	4-3½x5½-22.5	4	cent		cel-sht	sing	Eismn	hand					none	
White TCD	5	5,000	169		rol-I	rigid	s	36x5	40x6d	c-s	own	4-4½x6½-29.0	4	cent		cel-sht	sing	Eismn	hand					none	
White-Hickory H	1½		144		p-stl	rigid*	s	36x3½	36x4	wd	Con	4-3½x5 -22.5	4	cent		cel-ps	sing	Eismn	fix				cent	Pierce	motor
Wichita A	1		110		p-stl	s-flx	s	34x3	34x4	wd	own	4-3½x5 -19.6	4	ther	E-M	sq-t-s	sing	Eismn	hand					none	
Wichita K	1		118		p-stl	s-flx	s	36x3	36x4	wd	own	4-3½x5 -19.6	4	ther	Perf	zz-t-c	sing	Eismn	hand					none	
Wichita L	1½		118		p-stl	s-flx	s	36x3	36x5	wd	own	4-3½x5 -19.6	4	ther	Perf	zz-t-c	sing	Eismn	hand					none	
Wichita B	2		118		p-stl	s-flx	s	34x3½	34x3d	wd	own	4-3½x5 -19.6	4	ther	E-M	sq-t-s	sing	Eismn	hand					none	
Wichita R	2½		144		p-stl	s-flx	s	36x4	36x7*	wd	Wau	4-3½x5½-22.5	4	cent	Perf	zz-t-c	sing	Eismn	hand				l-b	Wau	motor
Wichita O	3½		165		p-stl	s-flx	s	36x5	36x5d	wd	Wau	4-4½x5½-32.4	2	cent	E-M	sq-t-s	sing	Eismn	hand				cent	Wau	motor
Wichita Q	5		165		p-stl	s-flx	s	36x6	38x6d	wd	Wau	4-4½x5½-32.4	2	cent	E-M	sq-t-s	sing	Eismn	hand				cent	Wau	motor
Wilcox S	1		128	Smth	p-stl	s-flx	opt	35x5*	35x5*	wd	Con	4-3½x5 -22.5	4	ther	Perf	zz-t-ps	sing	Bosch	hand	ltg 2	West		cent	Pierce	motor
Wilcox X	1½		144	Smth	p-stl	s-flx	s	36x4	36x5	wd	own	4-4½x5 -28.9	2	cent	Perf	zz-t-ps	sing	Bosch	hand	ltg 2	West		cent	Pierce	motor
Wilcox Q	2		150	Smth	p-stl	s-flx	s	36x4	36x3½d	wd	own	4-4½x5 -32.4	2	cent	Perf	zz-t-c	sing	Bosch	hand	ltg 2	West		cent	Pierce	motor
Wilcox P	3½		154	Smth	p-stl	s-flx	s	36x5	36x5d	wd	own	4-4½x5 -28.9	2	cent	Perf	zz-t-c	sing	Bosch	hand	ltg 2	West		cent	Pierce	motor
Wilcox W	5		162	Smth	p-stl	s-flx	s	36x5	40x6d	c-s	Wau	4-4½x6½-36.1	2	cent	Perf	fin-cst	sing	Bosch	hand		none		cent	Wau	motor
Wilson	2	2,550	144		rol-c	flex	s	36x4	36x4d	wd	Con	4-4½x5½-27.2	4	cent	Long	fin-cst	sing	Eismn	fix	opt	opt		cent	Pierce	motor
Wilson	3½	3,250	156		rol-c	flex	s	36x5	36x5d	wd	Con	4-4½x5½-32.4	2	cent	Long	fin-cst	sing	Eismn	fix	opt	opt		cent	Pierce	motor
Wilson	5		156		rol-c	s-flx	s	36x6	40x6d	wd		4-4½x5½-32.4	2	cent		fin-cst	sing	Eismn	fix	opt	opt		cent	Pierce	motor
Winther 47	2	2,800	150		rol-c	s-flx	s	36x4	36x7	wd*	Wis	4-4 x6 -25.6	4	cent	Bre	tub-cst	sing	Eismn	hand	opt	Bijur		cent	Duplex	motor
Winther 67	3	3,600	150		rol-c	s-flx	s	36x4	36x5d*	wd*	Wis	4-4 x6 -25.6	4	cent	Bre	tub-cst	sing	Eismn	hand	opt	Bijur		cent	Duplex	motor
Winther 87	4	4,000	156		rol-c	s-flx	s	36x5	40x5d*	c-s	Wis	4-4½x6 -28.9	4	cent	Bre	tub-cst	sing	Eismn	hand	opt	Bijur		cent	Duplex	motor
Winther 107	5	4,600	162		rol-c	s-flx	s	36x5	40x6d*	c-s	Wis	4-4½x5½-36.1	2	cent	Bre	tub-cst	sing	Eismn	hand	s&l	Bijur		cent	Duplex	motor
Winther 127	6	5,000	162		rol-c	s-flx	s	36x6	40x6d*	c-s	Wis	4-5½x5½-42.0	2	cent	Bre	tub-cst	sing	Eismn	hand	s&l	Bijur		cent	Duplex	motor
Wisconsin B	1½	1,650	136	Smth	p-stl	rigid	s	34x4	34x6	wd	Wau	4-3½x4 -19.6	4	cent	Chgo	cel-sht	sing	Eismn	hand				cent	Wau	motor
Wisconsin C	2½	2,500	156	Smth	p-stl	rigid	s	36x4	36x6	wd	Wau	4-4 x5½-25.6	2	cent	Chgo	cel-sht	sing	Eismn	hand				cent	Wau	motor
Witt-Will WD-16	1	2,000	120		p-stl	flex	s*	36x3*	36x4*	wd	Con	4-3½x5½-22.5	4	cent	Natl	s-t-sht	sing	Eismn	auto		none		cent	Pierce	motor
Witt-Will WD-18	2½	2,500	144		p-stl	s-flx	s*	36x3½*	36x3½d*	wd	Con	4-4¼x5½-27.2	4	cent	Natl	cel-sht	sing	Eismn	auto		none		cent	Pierce	motor

Steam Vehicles

Name and Model	Capacity in Pounds	Price of Chassis	Wheelbase in Inches	FRAME		TIRES			Wheels	BOILER							WATER		
				Material	Construction	Kind	SIZES IN INCHES Front	SIZES IN INCHES Rear		Location	Type	Heating Surface in Sq. In.	Horsepower	BURNER Type	BURNER Regulation	PRESSURE Normal in Lbs.	PRESSURE Maximum in Lbs.	Water Capacity in Gal.	CONDENSER Type	CONDENSER Circulation
Steamotor	4,000	$3,000	144	p-stl		s	36x4	36x6	wood	under hood	Doble	21,600	45	carb	auto	600		25	fin-sht	

ABBREVIATIONS—Types of Construction

*Other Options
amid—amidships
auto—automatic
c—center
c&l—center and left
c-s—cast steel
cent—centrifugal
cel-cst—cellular core cast case
cel-sht—cellular core sheet case
cylinders cast, 2 in pairs
cylinders cast, 4 in block
cylinders cast, 3 in threes
cylinders cast, 1 singly
d—dual
d-d—dry disk
d-p—dry plate
d-rd—double reduction
elec—electric
ext-dst—external drive-shaft
ext-f-s—external front wheels.
ext-jst—external jack-shaft
ext-r-w—external rear wheel
fab—fabric
fin-sht—finned tube core sheet case
flx—fixed
flex—flexible
fric—friction
grav—gravity
gset—gearset
hyd—hydraulic
ind-c—individual clutch
int-dst—internal drive-shaft
int-f-w—internal front wheels
in-g—internal gear
in-g-4—internal gear drive on 4 wheels
int-r-w—internal rear wheel
jst—unit with jackshaft
l—left
ltg—lighting
metl—metal
mtr—unit with motor
opt—optional
pist—piston pump
plan—planetary
pnu—pneumatic
pres—pressure
prog—progressive sliding gear
p-stl—pressed steel
r—right
r-a—unit with rear axle
ring-cst—ring core cast case
rol-c—rolled channel
rol-i—rolled I-beam
r-rd—radius rods
selec—selective sliding gear
s-flx—semi-flexible
s & l—starting and lighting
s, l & i—starting, lighting and ignition
s, l & i 2—starting, lighting and ignition two-unit
sing—single
s—solid
spgs—springs
sq-t-sht—square tube core sheet case
stk—stock
sub-f—sub-frame
ther—thermo-syphon
tor-a—torque arm
tor-t—torsion tube
vacm—vacuum
wd—wood
w-d—multiple disk in oil
worm—top worm
w-p—wet plate
zz-t-sht—zig-zag tube core sheet case

Prices are exclusive of the 3 per cent Government war tax

Commercial Vehicles for 1918—Concluded

ENGINE				TRANSMISSION												BRAKES		CONTROL			UNIVERSALS		
SPEED		FUEL SYS.		CLUTCH		GEARSET				FINAL DRIVE								STEERING GEAR					
	Truck in M.p.h.	Carbureter Make	Fuel Feed	Type	Make	Type	Make	Placed	Speeds	Type	Axle Make	Total Gear Reduction in High	Propulsion Taken By	Torque Taken By	Make of Springs	Foot	Hand	Placed	Make	Levers	Type	Make	Name and Model
2200	15	Schblr..	grav..	d-d...	Fuller..	selec...	Fuller..	mtr...	3	in-g...	Russl..	7.8	spgs...	spgs...	Mathr..	int-r-w.	ext-r-w.	r....	Ross..	c....	.....	.....	Union.....B
2160	15	Stmbg..	grav..	cone..	Hartfd.	ind-c...	Cotta..	amid..	3	worm	own....	8.2	r-rd....	.....	Tut....	int-r-w.	ext-jst.	l....	Lavn..	c....	metl..	Hart*..	U. S.....E
2000	15	Stmbg..	grav..	cone..	Hartfd.	ind-c...	Cotta..	amid..	3	worm	Shel...	8.7	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Hart*..	U. S.....H
1960	13	Stmbg..	grav..	cone..	Hartfd.	ind-c...	Cotta..	amid..	3	worm	own....	8.0	r-rd....	.....	Tut....	int-r-w.	ext-j-s.	l....	Lavn..	c....	metl..	Hart*..	U. S.....D
1940	12	Stmbg..	grav..	cone..	Hartfd.	ind-c...	Cotta..	amid..	3	chn...	Shel...	11.7	r-rd....	.....	Shel...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Hart*..	U. S.....J
1950	12	Stmbg..	grav..	d-p...	B-Beck.	ind-c...	Cotta..	amid..	3	worm	Shel...	8.8	r-rd....	spgs...	Shel...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Hart*..	U. S.....K
2125	14	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm	Shel...	8.6	.....	spgs...	spgs...	int-r-w.	int-r-w.	.....	Gem..	.....	.....	.....	United.....BSW
1980	12	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm	Shel...	8.7	.....	spgs...	spgs...	int-r-w.	int-r-w.	.....	Gem..	.....	.....	.....	United.....CSW
1980	12	Stmbg..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm	Shel...	8.7	.....	spgs...	spgs...	int-r-w.	int-r-w.	.....	Gem..	.....	.....	.....	United.....DSW
1807	10	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	amid..	4	worm	Shel...	11.7	.....	spgs...	spgs...	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	United.....ESW
.....	.....	Zenith..	grav..	.....	Muncie	selec...	Muncie	mtr...	4	in-g...	.....	9.0	.....	r-rd....	.....	int-r-w.	int-r-w.	.....	Ross..	.....	.....	.....	.....
2110	12	Rayfld.	grav..	w-d...	M-Evn.	ind-c...	Cotta..	amid..	3	bevl-4.	own....	9.0	spgs...	spgs...	Std....	int-r-w.	ext-dst.	r....	Lavn..	r....	.....	.....	United F. W. D.....B
.....	.....	Zenith..	grav..	d-p...	own....	selec...	own....	mtr...	3	worm	own....	.....	r-rd....	tor-a...	Kal....	int-r-w.	int-r-w.	l....	Lavn..	c....	.....	.....	Universal.....G
2100	12	Zenith..	grav..	d-d...	own....	selec...	own....	amid..	3	chn...	own....	.....	r-rd....	.....	Kal....	int-....	int-....	r....	Lavn..	r....	.....	.....	Universal.....D
2100	12	Zenith..	grav..	d-d...	own....	selec...	own....	amid..	3	chn...	own....	.....	r-rd....	.....	Kal....	int-r-w.	int-dst..	r....	Lavn..	r....	.....	.....	Universal.....L
2806	18	Stmbg..	vacm..	d-p...	own....	selec...	B-Lipe.	amid..	4	worm	Timkn.	6.0	spgs...	spgs...	Mthr..	int-r-w.	int-r-w.	r....	Gem..	c....	metl..	Spicer..	Velie.....25A
2215	14	Stmbg..	vacm..	d-d...	own....	selec...	B-Lipe.	amid..	4	worm	Timkn.	10.3	r-rd....	spgs...	Mthr..	int-r-w.	int-r-w.	r....	Gem..	c....	metl..	Spicer..	Velie.....26A
.....	.....	Zenith..	grav..	one...	own....	selec...	own....	mtr...	3	bevel..	W-W....	.....	spgs...	spgs...	Shel...	int-r-w.	ext-r-w.	l....	Jacx..	c....	metl..	Spicer..	Vim.....21
2000	50	H-N....	grav..	d-p...	own....	selec...	own....	amid..	4	in-g-4.	own....	8.0	spgs...	spgs...	Merl...	ext-dst.	int-r-w.	l....	own...	c....	.....	.....	Walter.....F
2000	11	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	4	worm	Timkn.	10.3	r-rd....	spgs...	Shel...	int-r-w.	int-r-w.	r....	Gem..	c....	metl..	Spicer..	Watson.....Tractor
2000	12	Stmbg..	grav..	d-d...	.....	selec...	.....	amid..	3	bevel..	.....	9.8	spgs...	spgs...	.....	ext-....	ext-....	.....	.....	c....	.....	.....	Ware.....
2100	12	Stmbg..	vacm..	d-d...	Warner	selec...	Warner	amid..	4	chn...	Timk*..	13.6	r-rd....	.....	G-C...	int-r-w.	ext-dst.	l....	Ross..	c....	metl..	K-B...	Western.....
.....	.....	own....	grav..	w-p...	own....	selec...	own....	amid..	4	bevel..	qwn....	.....	r-rd....	spgs...	.....	int-r-w.	ext-r-w.	l....	own...	c&l..	.....	.....	White.....GBBE
.....	.....	own....	grav..	w-p...	own....	selec...	own....	amid..	4	d-rd..	own....	.....	r-rd....	spgs...	.....	int-r-w.	ext-r-w.	l....	own...	c&l..	.....	.....	White.....TBC
.....	.....	own....	grav..	w-p...	own....	selec...	own....	amid..	4	chn...	own....	.....	r-rd....	.....	.....	int-r-w.	ext-jst.	l....	own...	c&l..	.....	.....	White.....TAD
.....	.....	own....	grav..	w-p...	own....	selec...	own....	amid..	4	chn...	own....	.....	r-rd....	.....	.....	int-r-w.	ext-jst.	l....	own...	c&l..	.....	.....	White.....TCD
2100	15	Stmbg..	vacm..	d-d...	Fuller..	prog...	Fuller..	mtr...	3	worm	Timkn.	.....	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	White-Hickory.....H
2055	15	Stmbg*	grav..	cone..	own....	selec...	Covert.	jst....	3	chn...	Shel...	7.2	r-rd....	.....	Shel*..	in-tr-w.	int-jst..	r....	Ross..	c....	.....	.....	Wichita.....A
2080	15	.....	grav..	cone..	own....	selec...	Covert.	amid..	3	worm	Shel...	7.8	spgs...	spgs...	Shel*..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Wichita.....K
.....	.....	Stmbg*	grav..	cone..	own....	selec...	Covert.	amid..	3	worm	Shel...	10.7	spgs...	spgs...	Shel*..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Wichita.....L
1900	13	Stmbg*	grav..	cone..	own....	selec...	Covert.	jst....	3	chn...	Shel...	8.2	r-rd....	.....	Shel*..	int-r-w.	int-jst..	r....	Ross..	c....	.....	.....	Wichita.....B
2300	13	Stmbg*	grav..	cone..	own....	selec...	Covert.	amid..	3	worm	Shel...	10.3	spgs...	spgs...	Shel*..	int-r-w.	int-r-w.	rr...	Ross..	c....	.....	.....	Wichita.....R
2200	11	Stmbg*	grav..	cone..	Hart....	selec...	B-Lipe.	amid..	4	worm	Shel...	11.7	spgs...	spgs...	Shel*..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Wichita.....O
2200	10	Stmbg*	grav..	cone..	Hart....	selec...	B-Lipe.	amid..	4	worm	Shel...	13.0	spgs...	spgs...	Shel*..	int-r-w.	int-r-w.	r....	Ross..	c....	.....	.....	Wichita.....Q
2200	18	Stmbg..	grav..	d-d...	B-Lipe*	selec...	B-Lipe*	mtr...	3	worm	Shel...	6.5	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Gem..	c....	metl..	Spicer..	Wilcox.....S
2100	16	Stmbg..	grav..	cone..	own....	selec...	own....	amid..	3	worm	Shel...	7.7	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Gem..	c....	metl..	Wilex*.	Wilcox.....X
2100	14	Stmbg..	grav..	cone..	own....	selec...	own....	amid..	3	worm	Shel...	8.6	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Gem..	c....	metl..	Wilex*.	Wilcox.....Q
2100	10	.....	grav..	cone..	own....	selec...	own....	amid..	3	worm	Shel...	11.7	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Gem..	c....	metl..	Wilex*.	Wilcox.....P
2000	14	Stmbg..	vacm..	cone..	own....	selec...	own....	amid..	4	worm	Shel...	8.7	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Gem..	c....	metl..	Spicer*.	Wilcox.....W
2140	14	Marvel.	grav..	cone..	Hart....	selec...	Covert.	amid..	3	worm	Shel...	8.6	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Wilson.....
2100	12	Marvel.	grav..	d-d...	B-Beck.	selec...	Covert.	amid..	4	worm	Shel...	8.7	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Ross..	c....	.....	.....	Wilson.....
2100	10	Marvel.	grav..	cone..	.....	selec...	.....	amid..	4	worm	.....	13.0	spgs...	spgs...	.....	int-r-w.	int-r-w.	l....	.....	c....	.....	.....	Wilson.....
2100	15	Master.	vacm..	d-p...	B-Beck.	prog...	own....	amid..	4	in-g...	Celf....	.....	spgs...	spgs...	Mthr...	int-r-w.	ext....	r....	Ross..	c....	metl..	Blood*.	Winther.....47
2300	14	Master.	vacm..	d-p...	B-Beck.	prog...	own....	amid..	4	in-g...	Celf....	10.0	spgs...	spgs...	Mthr...	int-r-w.	ext....	r....	Ross..	c....	metl..	Blood*.	Winther.....67
2200	12	Master.	vacm..	d-p...	B-Beck.	prog...	own....	amid..	4	in-g...	Celf....	12.5	spgs...	spgs...	Mthr...	int-r-w.	int....	r....	Ross..	c....	metl..	Blood*.	Winther.....87
2100	10	Master.	vacm..	d-p...	B-Beck.	prog...	own....	amid..	4	in-g...	Celf....	12.5	spgs...	spgs...	Mthr...	int-r-w.	int....	r....	Ross..	c....	metl..	Blood*.	Winther.....107
2100	10	Master.	vacm..	d-p...	B-Beck.	prog...	own....	amid..	4	in-g...	Celf....	.....	spgs...	spgs...	Mthr...	int-r-w.	int-r-w.	r....	Ross..	c....	metl..	Blood*.	Winther.....127
.....	16	Master.	grav..	d-d...	Fuller..	selec...	Fuller..	mtr...	3	worm	Shel...	.....	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Blood..	Wisconsin.....B
.....	15	Master.	grav..	d-d...	Fuller..	selec...	Fuller..	mtr...	3	worm	Shel...	.....	spgs...	spgs...	Shel...	int-r-w.	int-r-w.	l....	Lavn..	c....	metl..	Blood..	Wisconsin.....C
.....	.....	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm	Timkn.	3.0	spgs...	spgs...	.....	int-r-w.	int-r-w.	l....	Ross..	c....	metl..	Spicer..	Witt-Will.....D16
2000	14	Zenith..	grav..	d-d...	B-Lipe.	selec...	B-Lipe.	mtr...	3	worm	Timkn.	7.7	spgs...	spgs...	Shel...	int-r-w.	int....	l....	Ross..	c....	metl..	Spicer..	Witt-Will.....WD18

Steam Vehicles

SYSTEM		ENGINE							TRANSMISSION					CONTROL					Name and Model
Feed Pump Type	Feed Control	Location	No. of Cylinders	Cylinders Cast	Valve Location	Valve Action	Valve Stroke	Reverses By	Final Drive	Gear-Ratio	Axle Type	Propulsion Taken By	Torque Taken By	Throttle	Hook-up	Reverse	Steering Wheel Location	Brake Lever Location	
.....	.....	u-seat..	2	singly...	front....	Stephenson.	adj....	links.....	worm*.	7.75	full-fl...	springs....	springs..	lever....	pedal...	pedal...	left.....	left.....	Steamotor...

ABBREVIATIONS—Makers of Parts

Other Options
-K—Atwater-Kent
-L—Auto-Lite
-Beck—Borg & Beck
-Lipe—Brown-Lipe
-ng—Berling
-m—Bremer
-d—Buda
-n—Candler
-lfr—Celfor
-go—Chicago
-n—Continental
-an—Connecticut
-rt—Detroit

Dynt—Dyneto
Eismn—Eisemann
E-M—English & Mersick
Eur—Eureka
Fed—Fedders
Franck—Francke
G&O—G & O Mfg. Co.
GBS—Golden, Belknap & Swartz
G-C—Garden City
Gem—Gemmer
Har—Harrison
Hart—Hartford
Hays—Hayes
Hig—Higgins
H-Shaw—Hele-Shaw
H-S—Herschell-Spillman
Idl—Ideal
Iron—Iron City
Jacx—Jackson-Church-Wilcox
Jhnson—Johnson
Kal—Kalamazoo
K-B—Kinsler-Bennett
Key-H—Keystone-Hindley
Lavn—Lavigne
LeR—LeRoi
Lgt—Light
Ligt—Liggett
Lyc—Lycoming
M'C—McCord
Merl—Merrill
Mil—Milwaukee
Mnrch—Monarch
Mthr—Mather
Natl—National
N. A.—North American
P & B—Parish & Bingham
Perf—Perfection
Prsh—Parish
R-T—Rome-Turney
Rayfld—Rayfield
Rowl—Wm. Harvey Rowland
Russl—Russel
Rut—Rutenber
Salsby—Salisbury
Savg—Savage Arms
Schblr—Schebler
Shel—Sheldon
Shkspr—Shakespeare
Smth—A. O. Smith
S-P—Spring-Perch
Spltf—Splitdorf
Stewrt—Stewart
Stmbg—Stromberg
Sundmn—Sunderman
S-W—Sparks-Withington
Ther—Thermoid
Timkn—Timken
Torb—Torbenson
Tut—Tuthill
Univ—Universal Machine Co.
Wau—Waukesha
Wilex—Wilcox
Wis—Wisconsin

Prices are exclusive of the 3 per cent Government war tax

Technical Specifications of 31 Electric Trucks on The American Market

Ten Electric Industrial Trucks

Name and Model	Load Capacity in Pounds	PRICE OF CHASSIS: With Battery	PRICE OF CHASSIS: Without Battery	Wheelbase in Inches	TIRES: Kind	TIRES: SIZES IN INCHES: Front	TIRES: SIZES IN INCHES: Rear	BATTERY: Location	BATTERY: Make and Type	BATTERY: No. Plates	BATTERY: No. Cells	BATTERY: No. Trays	BATTERY: Amp.-Hr. Capacity	BATTERY: MILES PER CHARGE: Light	BATTERY: MILES PER CHARGE: Loaded	MOTOR: Location and Number	MOTOR: Make
C.T	1,000	.....	1,600	90	solid	36x3	36x3	amid-u	Edison-A5*	.....	60*	6*	187½*	.....	50*	unit-x-2	G.E.
C.T	2,000	.....	1,950	.....	solid	36x3½	36x4	amid-u	Edison-A6*	.....	60*	6*	225*	.....	45*	unit-x-2	G.E.
C.T	4,000	.....	2,350	116	solid	36x	36x d	amid-u	Edison-A8*	.....	60*	8*	300*	.....	50*	unit-x-2	G.E.
C.T	7,000	.....	3,350	123	solid	36x3½d*	36x4d	amid-u	Edison-A10*	.....	60*	8*	375*	.....	40*	unit-w-4	G.E.
C.T	10,000	.....	3,800	132	solid	36x4d*	36x5d	amid-u	Edison-A12*	.....	60*	8*	450*	.....	40*	unit-w-4	G.E.
Couple Gear A	10,000	5,500	4,800	96	solid	36x5d	36x5d	amid-u	Philadelphia	29	44	8	350	35	30	in wheel-4	own
Couple Gear ALDF	14,000	5,000	4,300	96	s&stl	36x5d	64x5	amid-u	Philadelphia	29	44	8	350	35	30	in wheel-2	own
Couple Gear ACDF	14,000	6,000	5,200	94	s&stl	36x5d	64x6	amid-u*	Philadelphia	29	44	8	350	35	30	in wheel-2	own
G.V	1,000	.....	.....	89½	solid	36x3½	36x2½	amid-u	Edison-A4*	9*	60*	6*	150*	.....	45	in rear-1	G.E.
G.V	2,000	.....	.....	104	solid	36x3½	36x3½	amid-u	Edison-A6*	.....	60*	6*	.....	.....	50*	in-rear 1	G.E.
G.V	4,000	.....	.....	112½	solid	36x4	36x3d	amid-u	Edison-A8*	.....	60*	12*	300*	.....	45	in rear-1	G.E.
G.V	7,000	.....	.....	132½	solid	36x6	36x4d	amid-u	Edison*	.....	60*	12*	375*	.....	40	in rear-1	G.E.
G.V	10,000	.....	.....	141½	solid	36x7	36x5	amid-u	Edison*	.....	60*	6*	.....	.....	35	in rear-1	G.E.
Lansden M	4,000	.....	.....	120	solid	36x4	36x3d	amid-u	Ironclad	.....	.....	.....	.....	50	40	unit-j-1	G.E.
Lansden M	7,000	.....	.....	130	solid	36x5	36x4d	amid-u	Ironclad	.....	.....	.....	.....	45	40	unit-j-1	G.E.
Lansden M	10,000	.....	.....	142	solid	36x6	36x5d	amid-u	Ironclad	.....	.....	.....	.....	40	35	unit-j-1	G.E.
Lansden M	12,000	.....	.....	142	solid	36x6	36x6d	amid-u	Ironclad	.....	.....	.....	.....	40	30	unit-j-1	G.E.
Walker M	1,000	.....	.....	93*	solid	34x3	36x3½	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker K	2,000	.....	.....	96*	solid	34x3½	36x4	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker L	4,000	.....	.....	110	solid	38x4	38x6	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker D	6,000	.....	.....	130	solid	36x5	38x4d	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker E	8,000	.....	.....	144	solid	36x6	38x5d	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker N	10,000	.....	.....	144	solid	36x7	38x6d	amid-u	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker Tractor 2	20,000	.....	.....	52	solid	34x3½	38x5	amid-o	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Walker Tractor 3	30,000	.....	.....	70	solid	34x4	38x6	amid-o	Edison*	.....	.....	.....	.....	.....	.....	unit-x-1	West.
Ward WS	750	.....	.....	88	solid	32x2½	32x2½	u-seat	Edison-G4	.....	65	5	100	.....	35*	amid-1	.....
Ward WA	1,000	.....	.....	90	solid	32x3	34x3½	amid-u	Edison-G7	.....	60	6	.....	.....	35*	in front-1	.....
Ward WB	2,000	.....	.....	102	solid	34x3½	36x4	amid-u	Edison-G9	.....	60	6	225	.....	35*	in front-1	.....
Ward WD	4,000	.....	.....	114	solid	36x4	38x6	amid-u	Edison-G11	.....	60	6	275	.....	30*	in front-1	.....
Ward WF	7,000	.....	.....	132	solid	38x6	40x8	amid-u	Edison-G14	.....	60	6	350	.....	25*	in front-1	.....
Ward WH	10,000	.....	.....	144	solid	40x8	42x10	amid-u	Edison-G18	.....	60	6	425	.....	20*	in front-1	.....

Industrial Trucks

Automatic Mill	.....	.....	.....	38	solid	16*x3	16*x3½	amid-o*	Edison-A4*	.....	40*	4*	150*	.....	.....	in front-1	.....
Automatic Tract D	.....	.....	.....	38	solid	16x3	16x3½	amid-o*	Edison-A4*	.....	40*	4*	150*	.....	.....	in front-1	.....
Automatic Tract S	.....	.....	.....	36	solid	16x3	16x3½	amid-o	Edison-A4*	.....	40*	4*	150*	.....	.....	amid	.....
Automatic Tract T	.....	.....	.....	38	solid	.....	.....	amid-u	Edison-A6*	.....	30*	4*	225*	.....	.....	in front-1	.....
Automatic L	.....	.....	.....	51	solid	10x5	16x3½	rear-o	Edison-A6*	.....	24*	3*	225*	.....	.....	in rear-2	.....
Automatic 4,000	.....	.....	.....	72	solid	27½x3	27½x3½	.....	Edison-A6*	.....	24*	3*	225*	.....	.....	unit-x-1	.....
Automatic 4,000	.....	.....	.....	72	solid	27½x3½	27½x3½	rear-o	Edison-A6*	.....	24*	3*	225*	.....	.....	unit-x-1	.....
Automatic H 4,000	.....	.....	.....	51	solid	10x5	16x3½	rear-o	Edison-A6*	.....	24*	3*	225*	.....	.....	in rear-1	.....
Automatic E 4,000	.....	.....	.....	52	solid	16x3	16x3½	rear-o	Edison-A6*	.....	24*	3*	225*	.....	.....	amid-1	.....
Automatic D 4,000	.....	.....	.....	38	solid	16x3	16x3½	rear-o	Edison-A4*	.....	20*	.....	150*	.....	.....	in front-1	.....
Electromobile R 2,500	.....	.....	.....	52	solid	9x5d	20x3	rear-o	Ironclad	11	15	1	158	.....	.....	unit-j-1	Wagner
Electromobile A 3,000	.....	.....	.....	43	solid	20x3	20x3	amid-u	Ironclad*	7*	15*	1*	100*	.....	.....	unit-j-1	Wagner
Electromobile B 3,000	.....	.....	.....	52	solid	20x3	20x3½	amid-u	Ironclad*	7*	24*	2*	100*	.....	.....	unit-j-1	Wagner
Electromobile CS 4,000	.....	.....	.....	52	solid	20x3½	20x3½	amid-u	Ironclad*	12*	15*	1*	220*	.....	.....	unit-j-1	Wagner
Electromobile D 4,000	.....	.....	.....	60½	solid	20x3½	20x3½	amid-u	Ironclad*	9*	24*	2*	125*	.....	.....	unit-j-1	Wagner
Electromobile T-E 15,000	.....	.....	.....	30	solid	20x3	20x3½	front-u	Ironclad*	11*	24*	2*	158*	.....	.....	unit-j-1	Wagner
Electromobile T-EJ 15,000	.....	.....	.....	30	solid	20x3	20x3½	front-u	Ironclad*	11*	24*	2*	158*	.....	.....	unit-j-1	Wagner
Elwell-Parker SA-SC-SE	.....	.....	.....	.....	solid	27½x3½	27½x3½	front-o	lead*	15*	12*	.....	196*	.....	.....	front	.....
Elwell-Parker DD-DG	.....	.....	.....	.....	solid	27½x3½	27½x3½	front-u	lead*	15*	12*	1*	196*	.....	.....	front	.....
Elwell-Parker IB-ID	.....	.....	.....	.....	solid	15x3½	15x3½	front-u	lead*	17*	12*	.....	192*	.....	.....	front	.....
Elwell-Parker F-W	.....	.....	.....	.....	solid	21½x3½	10½*x3½	amid-u	lead*	15*	12*	.....	196*	.....	.....	front	.....
Elwell-Parker F-I	.....	.....	.....	.....	solid	21*x3½	10½*x5	u-hood*	lead*	15*	24*	.....	392*	.....	.....	front	.....
Elwell-Parker	.....	.....	.....	.....	solid	21½x3½	10½x5	front-u	lead*	15*	12*	.....	196*	.....	.....	front	.....
Elwell-Parker E	.....	.....	.....	.....	solid	21½x3½	10½x5	u-hood	lead*	15*	12*	1*	196*	.....	.....	front	.....
Lansden BB	750	.....	.....	90	solid*	32x3	32x3	seat-u	Ironclad	.....	.....	.....	.....	65	60	unit-x-1	G.E.
Lansden BB	1,000	.....	.....	92	solid	34x2½	34x2½	amid-u	Ironclad	.....	.....	.....	.....	65	60	unit-x-1	G.E.
Lansden M	1,000	.....	.....	96	solid	36x3½	36x3	amid-u	Ironclad	.....	.....	.....	.....	50	40	unit-j-1	G.E.
Lansden M	2,000	.....	.....	106	solid	36x3	36x3½	amid-u	Ironclad	.....	.....	.....	.....	55	45	unit-j-1	G.E.
Lansing Tractor C	4,000	.....	.....	33	solid	18x3	18x4	amid-o	Ironclad*	11*	24*	3*	157½*	35	20	unit-x-1	West.
Lansing Tractor H	5,000	.....	.....	60	solid	18x4	18x5	amid-u	Ironclad*	9*	24*	4*	126*	30	15	unit-x-1	West.
Lansing Tractor D	10,000	.....	.....	42	solid	18x3	18x5	amid-o	Ironclad*	17*	24*	6*	252*	35	20	unit-x-1	West.
Mercury Tractor Z	.....	1,715	1,205	40½	solid	15x3½	20½x3½	rear-o	Edison-A6*	.....	30*	5*	.....	.....	.....	amid-1	G.E.
Mercury Tractor X	.....	2,190	1,490	40	solid	16x3	20x3½	rear-o	Edison*	.....	.....	.....	.....	.....	.....	amid-1	Diehl
Transmobile EE-1	4,000	.....	.....	66½	solid	20x3½	10x4	u-hood	Edison-A8*	.....	24*	1	300*	.....	.....	amid-1	G.E.

ABBREVIATIONS—Types of Construction

*—with other options
amid—amidships
amid-o—amidships, over frame.
amid-u—amidships, undersiung below frame
btw-seats — between seats
cent—center
d—dual
front-u—in front, under frame
Her-gear—Herringbone gears
l-plat—to left of platform
l-seat—to left of seat
rad-rd—radius rods
rear-o—at rear, over frame
r-seat—to right of seat
rcl-chain—roller chain
s-chain—silent chain
sp-gear-f—spur gear to front wheels
st-col—on steering column
sub-fr—sub frame
top-wm—top worm
top-wm-f—top worm to front wheels
tor-arm—torque arm
u-floor—under floor
u-hood—under hood
unit-j—unit with jackshaft
unit-x—unit with axle
u-plat—under platform
u-wheel—under steering wheel
u-seat—under seat
½-ell—½ elliptic
½-trans—½ transverse elliptic
¾-ell—¾ elliptic

ABBREVIATIONS—Parts Makers. **Ironclad**—Exide Ironclad type. **G. E.**—General Electric **West**—Westinghouse

Commercial Vehicle Chassis Listed on for the 1918 Season

Designed for Indoor Application

MOTOR					CONTROLLER		DRIVE						SPRINGS		CONTROL		
Winding	Horse-power	Voltage	SPEED IN MILES PER HOUR		Location	SPEEDS		GEARING		Total Gear-Ratio	Torque Taken By	Propulsion Taken By	Front	Rear	Steer	Controller Lever	Name and Model
			Light	Loaded		Ahead	Reverse	First Reduction	Final Reduction								
series	2.5	85*	15	13½	st-col	4	2	spur-gear	spur-gear	10.00-1	springs*	rad-rd*	¾-ell	½-ell	wheel-l	u-wheel	C.T
series	3.2	85*	14	12	st-col	4	2	spur-gear	spur-gear	11.50-1	springs*	rad-rd*	½-ell	½-ell	wheel-l	u-wheel	C.T
series	5.0	85*	12	10	st-col	4	2	spur-gear	spur-gear	12.14-1	springs*	rad-rd*	½-ell	½-ell	wheel-l	u-wheel	C.T
	7.0	85*	11	9	st-col	4	2	spur-gear	spur-gear	17.32-1	springs*	rad-rd*	½-ell	½-ell	wheel-l	u-wheel	C.T
	7.0	85*	9	7	st-col	4	2	spur-gear	spur-gear	20.14-1	springs*	rad-rd*	½-ell	½-ell	wheel-l	u-wheel	C.T
series	12.0	88	8	6	u-seat	5	5	direct	bevel	25.00-1	springs*	rad-rd*	¾-ell	½-ell	wheel-r	btw seats	Couple Gear A
series	10.0	88	8	6	u-seat	5	5	direct	bevel	25.00-1	springs*	rad-rd*	½-ell	½-ell	wheel-r	btw seats	Couple Gear ALDF
series	10.0	88	8	6	u-seat	5	5	direct	bevel	25.00-1	springs*	rad-rd*	½-ell	½-ell*	wheel-r	btw seats	Couple Gear ACDF
series	2.5	85	14	12	u-seat	5	2	s-chain	rol-chn	12.92-1	tor-a	rad-rd	½-ell	½-ell	wheel-l	l-seat	G.V
series	3.5	85	12	10	u-seat	5	2	s-chain	rol-chn	10.76-1		rad-rd	½-ell	½-ell	wheel-l	l-seat	G.V
series	4.5	85	11	9	u-seat	5	2	s-chain	rol-chn	11.61-1	rad-rd	rad-rd	½-ell	½-ell	wheel-l	l-seat	G.V
series	6.0	85	10	8	u-seat	5	2	s-chain	rol-chn	14.00-1	rad-rd	rad-rd	½-ell	½-ell	wheel-l	l-seat	G.V
series	7.0	85	9	7	u-seat	5	2	s-chain	rol-chain	14.00-1	rad-rd	rad-rd	½-ell	½-ell	wheel-l	l-seat	G.V
series		60	10	8*	in dash	4	2	bevel	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		60	9	8*	in dash	4	2	bevel	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		60	8	6*	in dash	4	2	bevel	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		60	8	6*	in dash	4	2	bevel	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		60*	16	15	u-seat	5	5	direct		17.00-1	springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker M
series		60*	15	14	u-seat	5	5	direct		17.00-1	springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker K
series		60*	14	13	u-seat	5	5	direct		17.00-1	springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker L
series		60*	12	11	u-seat	5	5	direct		16.00-1	springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker D
series		60*	11	10	u-seat	5	5	d.rec		16.00-1	springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker E
series		60*	11	10	u-seat	5	5	direct		16.00-1	springs	springs	½-ell	½-ell	wheel-l*		Walker N
series		60*	10	6	u-seat	5	5	direct			springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker Tractor 2
series		60*	10	6	u-seat	5	5	direct			springs	springs	½-ell	½-ell	wheel-l*	l-seat	Walker Tractor 3
series		80		10*	u-floor	5	2	direct	sp-bev		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Ward WS
series		60		10*	u-seat	4	2	none	worm		springs	springs	½-ell	½-ell	wheel-l	l-seat	Ward WA
series		60		10*	u-seat	4	2	none	worm		springs	springs	½-ell	½-ell	wheel-l	l-seat	Ward WB
series		60		8½*	u-seat	4	2	none	worm		springs	springs	½-ell	½-ell	wheel-l	l-seat	Ward WD
series		60		6*	u-seat	4	2	none	worm		springs	springs	½-ell	½-ell	wheel-l	l-seat	Ward WF
series		60		6*	u-seat	4	2	none	worm		springs	springs	½-ell	½-ell	wheel-l	l-seat	Ward WH

Industrial Trucks.

series		48*			b-seat	3	3	s-chain*	rol-chain	12.25-1	springs	springs	coil	coil	wheel-l	l-seat	Automatic Mill
series		48*			in dash	3	3	s-chain*	rol-chain	12.25-1	springs		coil	coil	lever-r	right	Automatic Tract D
series		48*			b-seat	3	3	s-chain*	rol-chain	12.25-1	tor-arm	tor-arm	coil	coil	lever-c	l-seat	Automatic Tract S
series		48*			u-seat	3	3	worm	worm	14.33-1					lever-r	r-seat	Automatic Tract T
series		48*			in dash	3	3	spur gear	spur gear	10.00-1					lever-l	right	Automatic L
series		48*			u-plat	3	3	worm	worm	14.33-1	tor-arm	tor-arm			lever-l	right	Automatic
series		48*			u-plat	3	3	worm	worm	14.33-1					lever-l	right	Automatic
series		48*			in dash	3	3	spur gear	spur gear	10.00-1	springs*	springs			lever-l	right	Automatic H
series		48*			in dash	3	3	s-chain*	rol-chain	12.25-1	tor-arm	springs	coil	coil	lever-r	left	Automatic E
series		48*			in dash	3	3	s-chain*	rol-chain	12.00-1		springs	coil	coil	lever-r	left	Automatic D
series		30	5	4	o-frame	4	4	s-chain	rol-chain	14.00-1				coil	lever-r	left	Electromobile R
series		30	5	4	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	left	Electromobile A
series		50	8	7	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	left	Electromobile B
series		30	5	4	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	left	Electromobile CS
series		50	8	7	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	left	Electromobile D
series		50	8	7	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	left	Electromobile T-E
series		50	8	7	u-plat	4	4	s-chain	rol-chain	14.00-1			coil	coil	lever-r	l-seat	Electromobile T-EJ
series		24			in dash	3	3	none*	top wm-f*						lever-r	left	Elwell-Parker SA-SC-SE
series		24			in dash	3	3	none*	top wm-f*						lever-r	left	Elwell-Parker DD-DG
		24			in dash	3	3	none*	top worm						lever-r	left	Elwell-Parker IB-ID
		24				3	3	spur-gear	sp-gear-f						lever-r	left	Elwell-Parker F-W
series		24			in dash	3	3	none*	top wm*						lever-r	left	Elwell-Parker F-I
series		24				3	3	spur gear	sp-gear						lever-r	left	Elwell-Parker
series		24			in dash	3	3	sp-gear	sp-gear-f						lever-r	left	Elwell-Parker E
series		48	16	15	in dash	4	2	direct	Her-gear		tor-arm	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden BB
series					in dash	4	2	direct	Her-hear		tor-arm	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden BB
series		60	14	12	in dash	4	2	bevel gr	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		60	12	10*	in dash	4	2	bevel gr	rol-chn		springs	springs	½-ell	½-ell	wheel-l	u-wheel	Lansden M
series		48	7½	4	u-seat	4	4	none	worm	10.00-1	sub-fr	sub-fr	½-ell	none	wheel-r*	l-seat*	Lansing Tractor C
series		48	7½	4	u-seat	4	4	none	worm	10.00-1	tor-arm	springs	½-ell	½-ell	wheel-r*	l-seat*	Lansing Tractor H
series		48	7½	4	u-seat	4	4	none	worm	10.00-1	sub-fr	sub-fr	½-ell	none	wheel-r*	l-seat*	Lansing Tractor D
series		32	6½		u-seat	3	2		worm	17.50-1	sub-fr	sub-fr	none	none	lever-r	btw seats	Mercury Tractor Z
series		42	8		u-seat	3	3		worm	17.00-1	tor-arm	tor-arm	½-trans	½-ell	lever-	r-seat	Mercury Tractor X
series	2	24	7		st-col	3	3	bevel	bevel	17.00-1					wheel-		Transmobile EE21

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rear-o—at rear, over frame
r-seat—to right of seat
rol-chain—roller chain
s-chain—silent chain
sp-gear-f—spur gear to front wheels
st-col—on steering column
sub-fr—sub frame
top-wm—top worm
top-wm-f—top worm to front wheels
tor-arm—torque arm
u-floor—under floor
u-hood—under hood
unit-j—unit with jackshaft
unit-x—unit with axle
u-plat—under platform
u-wheel—under steering wheel
u-seat—under seat
½-ell—½ elliptic
½-trans—½ transverse elliptic
¾-ell—¾ elliptic

Eat Plenty—Eat Wisely—but Without Waste

McNamara Adds Record

Non-Motor Stop Run Detroit-Indianapolis-Chicago and Back in 24 Hours

Actual Running Time for 802 Miles 20 hr., 47 min.

DETROIT, Oct. 27—Ray McNamara has added to his long string of victories gained as Maxwell road engineer by piloting a Maxwell five-passenger in a non-motor stop run from Detroit to Indianapolis, Chicago and Detroit in 23 hr. 9 min.

The run was made through rain and mud for the better part of 15 hr., but allowing for necessary stops and the time the car was in control in cities, the running time actually was 20 hr. 47 min. McNamara was checked in at Indianapolis at 8:15 a. m., for an average of 42.89 m.p.h. over the 305 miles. The 202 miles to Chicago were made at 41.79 m.p.h. Despite the fact weather conditions were extremely unfavorable all the way to Detroit McNamara checked in at the finish with an average of 31.33 m.p.h. from Chicago, 295 miles. The average for 802 miles actual running time was 38.63 m.p.h. For the total time the average was 34.54 m.p.h. and 9 min.

The high spots in McNamara's records so far stand as follows:

Detroit to Indianapolis and return in 1915, 20 hr. 1 min. for the 597.2 miles.

Philadelphia to Pittsburgh early in 1916, across the Alleghenies, 8 hr. 19 min., breaking all records for the famous 294-mile testing course.

Seattle to Portland, 1916, 199 miles, at 30 m.p.h., 13 min. less than the fastest limited record.

August, this year, Windsor to Toronto, 6 hr. 50 min.; Toronto to Montreal, 11 hr.; Montreal to Quebec, 4 hr. 1 min. The Montreal-Quebec mark shattered all previous motor car records in Canada, beating the fastest express by 59 min.

305 MILES AT 43 M. P. H.

Detroit, Oct. 26—Joe Dawson, driving a Chalmers four-passenger car, this week made a record-breaking trip from San Antonio to Dallas, Tex., in 6 hr. 55 min. 40 sec. The distance was 305 miles, an average of more than 43 m.p.h. This beats the time of the Texas Special train, which makes the trip from San Antonio to Dallas in 7 hr. 55 min. The car was equipped with United States Royal cord tires and Houk wire wheels. The previous record was 9 hr. flat. The roads were mostly rough due to army transport work.

SMITH MERGER REPORT

New York, Oct. 30—Special telegram—Rumors that the Smith Motor Truck Co., Chicago, making the Smith-Form-A-Truck, and the Commercial Car Unit Co., Philadelphia, Pa., making what was the Hudford attachment, have been merged, are discounted by Charles E. Danforth, a banker of this city and one of the members of the Smith creditors' committee. Danforth stated that such a suggestion was made by one of the creditors but was not accepted and is doubtless responsible for the rumor. The Smith company, Danforth states, is doing well since the formation of the creditors' committee. This committee has advanced $100,000 to pay off all the small creditors, and the company is producing. Thursday, Oct. 25, it received orders for 187; Friday, eighty-nine, and Saturday, sixty-two. He states as his belief that the company will pull out of its difficulties.

APPERSON TOURSTER DEC. 1

Chicago, Oct. 29—The Apperson Motor Car Co., Kokomo, Ind., will bring out a new four-passenger car to be known as the Tourster about Dec. 1. This will be somewhat different from the present Appersons, although the main difference will be in body. A more detailed description of this new job will be given about a month hence, when deliveries begin.

Increases in Prices

CHICAGO, Oct. 29—The week's increases in prices are headed by those of Willys-Overland, which announces increases on all models, effective Nov. 1. The new prices of the Willys-Overland include the war tax, and hence are tax free. They are:

MODEL	OLD PRICE	NEW PRICE
Light Fours		
90 touring	$ 750	$ 795
90 roadster	735	780
Country Club	795	840
90 sedan	1,195	1,240
85 Fours and Sixes		
85-4 touring	$ 895	$ 930
85-4 roadster	880	915
85-4 coupe	.....	1,285
85-4 sedan	.....	1,485
85-4 chassis	.....	845
85-6 touring	1,095	1,130
85-6 roadster	1,080	1,115
85-6 coupe	1,385	1,420
85-6 sedan	1,585	1,620
85-6 chassis	.....	1,045
Willys Six		
89 touring	$1,295	$1,365
89 club six	1,295	1,365
89 sedan	1,975	2,045
89-6 chassis	.....	1,245
Willys-Knight Fours		
88-4 touring	$1,450	$1,525
88-4 coupe	.....	2,175
88-4 sedan	.....	2,225
88-4 limousine	.....	2,325
88-4 chassis	.....	1,375
Willys-Knight Eights		
88-8 touring	$1,950	$2,000
88-8 sedan	2,650	2,700
88-8 limousine	2,750	2,800
88-8 town car	2,750	2,800
88-8 Varsity	.....	2,550
88-8 chassis	.....	1,850
800-lb. Delivery		
90 panel delivery	$ 785	$ 810
90 express	760	785
90-D chassis	720	745
1200-lb. Delivery		
Express	$ 905	$ 930
Chassis	855	880
Government chassis	.....	940

The Moline Automobile Co., maker of the Moline-Knight, will increase the prices of its cars Nov. 10 as follows:

MODEL	OLD PRICE	NEW PRICE
C roadster	$1,495	$1,575
C touring	1,495	1,575
G roadster	1,840	1,950
G touring	1,840	1,950
L sedan	.....	2,280

Business in Cars Quiet

Freight Situation Continues Bad While Weather Restricts the Driveaways

Factories Making Better Dealers of Sales Organization

DETROIT, Oct. 27—Business has been quiet for the last week, though in many instances the manufacturers report it as good as can be expected at this time of the year. These manufacturers are the large producers and the ones that have been enjoying a consistently larger demand during the last year.

The freight situation continues bad, and driveaways have offered little outlet because of the weather. The result is that cars have piled up more or less at the various factories. The lake routes are offered a partial outlet to the East.

One result of the war that is becoming evident is the attempt of the factories to make their dealers better from a sales and service standpoint. They are realizing increased sales resistance must be met with better salesmanship. Nearly all the factories are holding dealer schools, service schools, conventions and conferences with just this end in view. They are attempting to make their present dealers better dealers. In other instances, manufacturers are increasing the territory of their already successful dealers and letting those dealers apply their methods to the entire territory. Unsuccessful dealers are being eliminated, and the successful ones are becoming more powerful.

The material situation in the larger factories is not bad in most instances. The smaller manufacturer, with little resources and little demand, is the one that is suffering. However, in all quarters much doubt is expressed as to the availability of material in the future. It is stated that the iron and steel trade have been requested to furnish complete data to the federal trade committee as to their contracts and obligations during the next nine months, and fear is expressed that present standing contracts may be abrogated. As the tonnage is limited, it is possible that this, because of the large amounts of iron and steel necessary for war contracts, will cause a general shortage of material in the motor car field.

New York, Oct. 29—A condition of unrest flanked by the second Liberty Loan on the one hand and the rising costs of necessaries on the other is pervading New England and Eastern New York dealers in the larger cities handling the higher-priced cars report a slowing up in sales with but few exceptions, though dealers in lower-priced cars do not appear to have been so morally affected. The used car market in New York had a decided slump during last week, and nearly every dealer reports rather larger stocks than can be

Our Soldiers Need All the Food We Can Save

handled comfortably with little demand. The accessory situation is not all that can be desired. Both freight and express shipments are months getting in and several dealers report it impossible to get products which come in tin cans, due probably to the shortage of tin. On Long Island, particularly near the army cantonments, accessory dealers are doing a splendid business in general, though garages and shops are suffering for mechanics. There does not appear to be any shortage of unskilled labor, though the munition plants have taken their toll of skilled men.

SPRINGS AND RIDING COMFORT

Philadelphia, Pa., Oct. 26—Rusty springs are better for very rough roads and high speed, but for moderate speeds on smooth roads, such as city pavements, well-lubricated springs are best. This, in brief, is the conclusion reached at the monthly meeting of the Pennsylvania Section of the Society of Automotive Engineers held here last night. About thirty engineers attended the session which is the first of a series that will take up "The Elements of Car Construction Affecting Easy Riding." Subsequent meetings will take up the relation of upholstery to this problem, wheels and tires and shock absorbers.

In opening the discussion, Walter C. Keyes, chief engineer of the Standard Parts Co., Cleveland, stated that there is no outstanding superiority in the riding qualities of any particular type of spring.

The three factors affecting riding comfort are (1) tires, which absorb small vibrations and bumps of perhaps 2 or 3 in.; (2) springs, which absorb all the larger shocks; and (3) upholstery, which absorbs the multitude of small shocks and vibrations.

The consensus of the meeting appeared to be that no spring as yet designed realizes the ideal.

SHOTWELL INCREASES CAPITAL

Indianapolis, Ind., Oct. 27—The Shotwell Pump & Tank Co. has increased its capital from $60,000 to $100,000. The Shotwell company was organized only a year ago, and the growth of the business is reflected in the increased capital.

Fuel Mixture Economy

Official Test Shows Moto-Pep Gain at Some Speeds Over Gasoline

First Try-out with S. A. E. Equipment and Method

INDIANAPOLIS, Ind., Oct. 27—The first official economy and acceleration test in which the equipment and method of testing recommended by the Society of Automotive Engineers has been used was made in determining the value of a combined fuel energizer and carbon remover called Moto-Pep. This test was sanctioned by the American Automobile Association and was run under the supervision of Chester S. Ricker, technical representative of the A. A. A. and of the Indianapolis Motor Speedway. This test was made on a Maxwell, Oct. 17-21 inclusive, and the results have just been made public. Moto-Pep is used in the proportion of ½-oz. per gallon of gasoline.

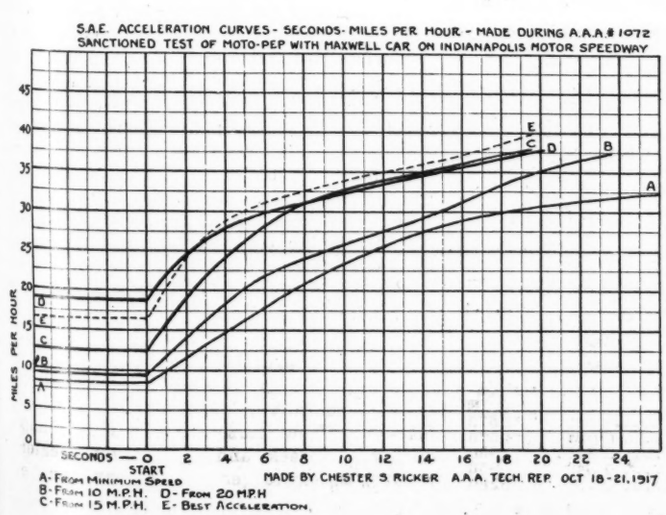
Its purpose was to compare the economy and determine the difference in operation of a standard car operated upon gasoline and then upon gasoline treated with Moto-Pep. The test was started by making acceleration and economy tests on gasoline alone. This occupied the first day and before any more could be run the temperature dropped 30 degrees, so that comparisons between results obtained on the first day and other days are not valuable. On the last day, gasoline and Moto-Pep mixture and gasoline alone were used on alternate runs, so that the operating conditions were identical and a direct comparison was possible.

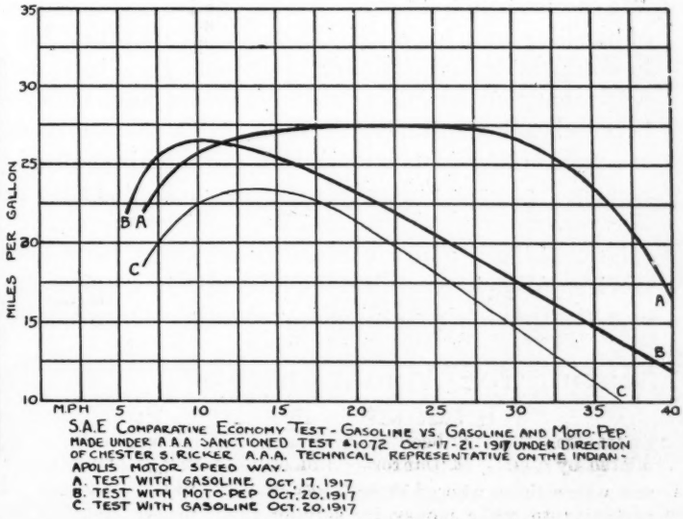
It is interesting to note that when the speed was 10 m.p.h. the Moto-Pep mixture showed a gain in economy over gasoline of 60.5 per cent, but at speeds both immediately above and below this figure, gasoline alone showed a greater economy, being 4.8 per cent at 7 m.p.h. and 7.2 per cent at 14½ m.p.h. It seems probable that rerunning the test at 10 m.p.h. might give a decreased increase for the mixture. At all speeds above this up to 40 m.p.h., the increase in economy for the Moto-Pep mixture ranged between 10½ and 20 per cent, the greatest gain being at approximately 30 m.p.h. The best showing of economy on gasoline was 24.4 per gallon, at a speed of 14.6 miles per hour. The best showing for the Moto-Pep mixture was 27 miles per gallon at 10 m.p.h. The above results were obtained on the last day of the test when the temperature was 50 deg. Fahr.

A very much better economy showing was made for gasoline on the first day of the test when the temperature was in the neighborhood of 80 deg. Fahr. This showed an economy of 27½ miles per gallon at all speeds from 18 to 26 m.p.h. The acceleration test was made for 2½, 10, 15 and 20 m.p.h. with both fuels and practically no variation in acceleration was noticed with the Moto-Pep as compared with pure gasoline.

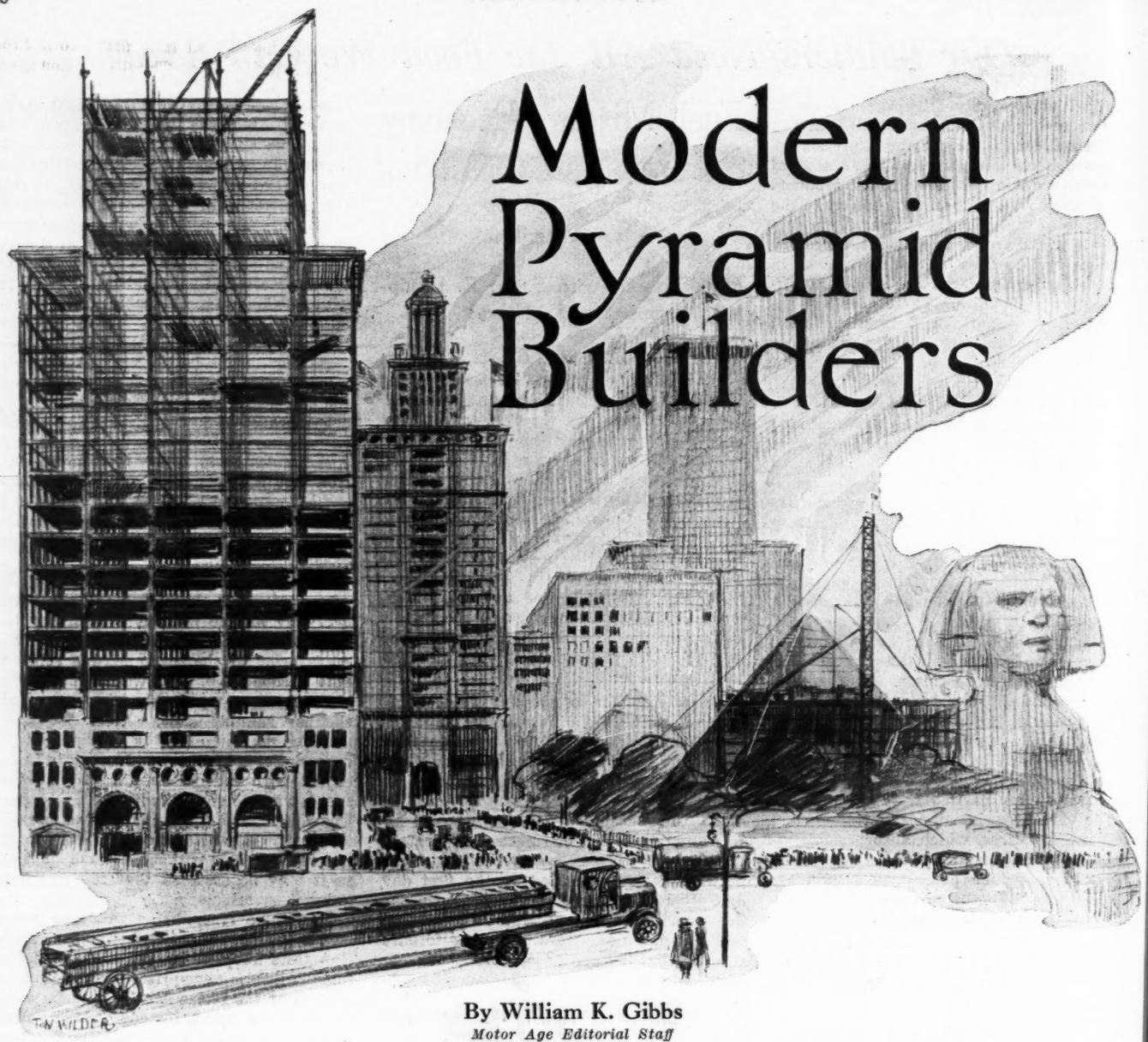
Official reports state that the car used was a Maxwell demonstrator taken from everyday service without preliminary tuning up. It had been driven nearly 2000 miles prior to the test and was considerably carboned up, as it would knock when the accelerator was suddenly depressed and the car running slow. After 200 miles, running on Moto-Pep, it was possible to depress the accelerator suddenly to the full extent with the car running at minimum speed, without any pounding being evident. The report also states that it was possible to throttle down to lower speed after the run on Moto-Pep without signs of bucking, so it may be assumed that the compound reduced carbon deposit.

It will be remembered that the recommended method for economy and acceleration tests adopted by the S. A. E. at its summer meeting comprises for the economy portion of the test a special tank in which the fuel is weighed, instead of being measured by a quantity measure. The acceleration portion of the test involves the use of a special electric time-measuring apparatus, operated by the front wheel and which makes an autographic record of the number of wheel revolutions per second, for each second of the test.


S.A.E. ACCELERATION CURVES - SECONDS - MILES PER HOUR - MADE DURING A.A.A. # 1072
SANCTIONED TEST OF MOTO-PEP WITH MAXWELL CAR ON INDIANAPOLIS MOTOR SPEEDWAY
MILES PER HOUR
SECONDS — 0 START 2 4 6 8 10 12 14 16 18 20 22 24
A- FROM MINIMUM SPEED
B- FROM 10 M.P.H. D- FROM 20 M.P.H
C- FROM 15 M.P.H. E- BEST ACCELERATION.
MADE BY CHESTER S RICKER A.A.A. TECH. REP. OCT 18-21, 1917


MILES PER GALLON
MPH 5 10 15 20 25 30 35 40
A
B
C
S.A.E COMPARATIVE ECONOMY TEST - GASOLINE VS. GASOLINE AND MOTO-PEP
MADE UNDER A.A.A SANCTIONED TEST #1072 OCT-17-21-1917 UNDER DIRECTION
OF CHESTER S. RICKER A.A.A. TECHNICAL REPRESENTATIVE ON THE INDIANAPOLIS MOTOR SPEED WAY.
A. TEST WITH GASOLINE OCT. 17. 1917
B. TEST WITH MOTO-PEP OCT. 20. 1917
C. TEST WITH GASOLINE OCT. 20. 1917

Modern Pyramid Builders



By William K. Gibbs
Motor Age Editorial Staff

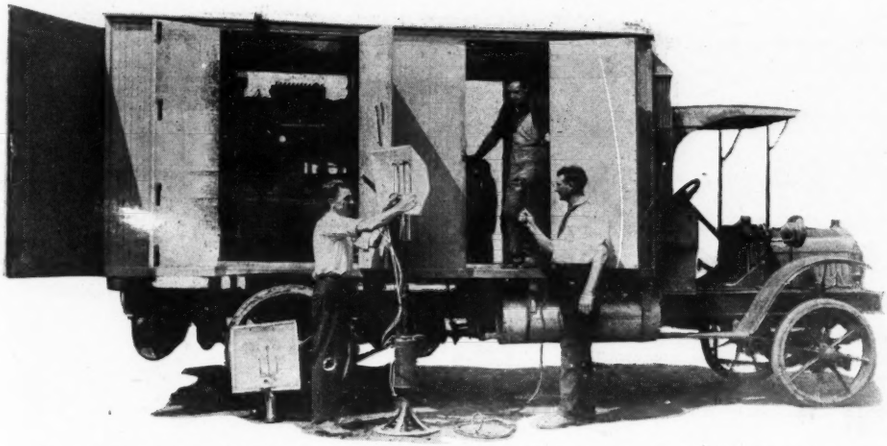
BACK in the long-forgotten years the Egyptians erected the pyramids and the sphinx, which stand as monuments perpetual of the ingenuity of a past we know little about. How these gigantic pieces of rock were raised to the heights of the pyramids is not known; perhaps never will be. We cannot help but believe the Egyptians had some highly-perfected means of handling such huge weights. Granting that they did, these machines must be comparable to the motor truck of today and its wonderful achievements—work that two decades ago no one would have believed possible. We give herewith a few instances of motor truck performances preëminent. There are many other instances just as enlightening, all of which show the tremendous reserve power of modern trucks and also point out that trucks, like persons, can perform tasks for which they did not especially fit themselves. Like a man's usefulness grows as he chooses, so does a motor truck's. Who knows what the future of the truck may be as a burden bearer or a time and labor-saving investment? Only the future can show this.

Moving the Mountain to Mahomet

WHAT the public demands it usually gets, that is, if it is humanly possible and where those who go after it see an opportunity to make money by serving the whimsicalities of the masses. Satisfying the tastes of the movie-going public for frequent changes of programs has speeded up the duties of the film producers, necessitating outdoor motion picture photography at night. At first the problem of proper lighting caused producers considerable inconvenience, since many locations are far from electric lines that can be tapped for current. The Vitagraph Co. of America has solved the problem by fitting a portable lighting plant to a 5-ton White truck. With this outfit sufficient current is provided for filming night scenes of the largest productions and the generating outfit can be taken to any location where it is needed. The body of the truck is van-like in shape and is divided into two compartments. The front compartment houses a 218 amp., 120-volt generator and the rear a five-cylinder marine engine of 50 hp. at 750 r.p.m. On each side of the driver's seat are vertical tube radiators for cooling the marine engine. The outfit as shown herewith was used in taking night sceens in the Battle Cry of War and also in the Battle Cry of Peace.

Bandit-Protected Pay Truck

Chicago pay-roll bandits would find no cockle-shell craft were they to attempt entree to the pay truck office used by the Chicago Railway Co., for paying off its em-



To satisfy the whimsicalities of the movie-going public for night scenes, Vitagraph equipped a White truck as a power station and carries its source of current to the locale where picture is being filmed

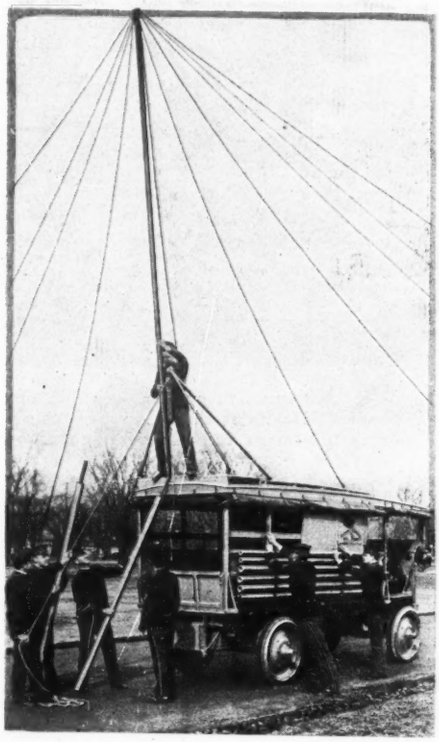
ployees. A special body is attached to a White truck chassis which has accommodations for four paymasters, a chauffeur and a guard, all of whom, of course, go heavily armed.

Swivel chairs are provided for the paymasters and a table between these is fitted with hinges so that it may be dropped when not in use. The table in the center as shown in one of the illustrations herewith is used for making up payrolls while the truck is enroute and this table is within easy reach of money tray shelves on either side. Windows are protected by iron bars and are connected with a burglar alarm system.

In paying direct from the truck, which frequently is done, the chief paymaster sits at the extreme end of the office, takes the pay envelopes from the shelf and passes them out through a wicket. While the men are receiving their money the guard stands in the rear of the office and the chauffeur guards the front. While the truck is traveling through the streets the money is carried in a steel vault built in the body of the truck behind the rear seat.

An Office on Wheels

Portable offices are not common, but the New York National Guard has such an office for the use of its commanding officer in the training quarters in Texas. This office has all the equipment and conveniences necessary for carrying on the business connected with the duties of the commanding officer and it is fitted to a 2-ton White truck chassis. The illustration gives only a meager idea of the different phases of army business it is designed to meet. The table in the center of the body is for examining drawings, maps and other important papers. When not needed it can be removed. Seats on the sides accommodate six persons and if necessary the officer and his staff can transact business while the truck is in motion. In the front there is a roll-top desk, seats for clerks and compartments for three typewriters, which can be drawn out on slides and operated from the front of the desk. The writing shelf can be dropped when not in use. There are drawers for filing documents, correspondence and record cards. Long compartments are provided for filing drawings and other bulky papers. There is a telephone as part of the equipment. A swinging bulletin board is attached and there is a shelf that may be dropped down outside the truck to serve as a desk for officers in making out reports.



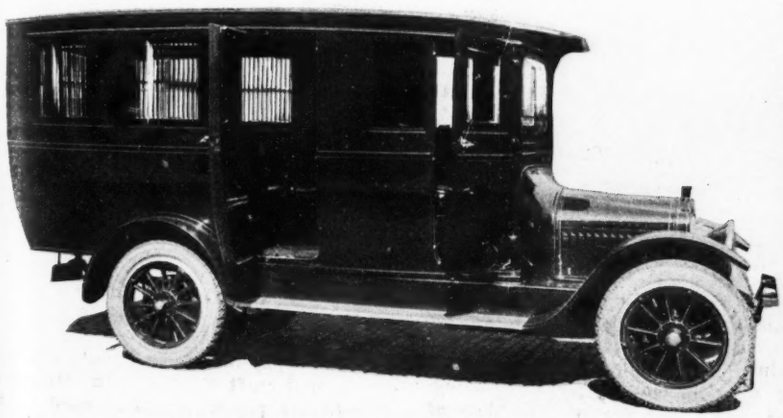
Nash Quads find many uses. Here is one used by the U. S. Signal Corps. It is equipped with a telescoping tower for wireless work

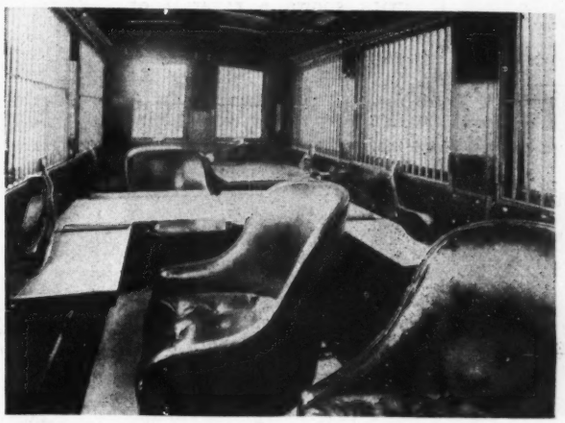
An Elephantine Task

Dunk was a circus elephant until 27 years ago when he gave up the sawdust ring for a life of ease in the zoo at Washington, D. C. Recently he became so old that his step was feeble and he suffered a fall which broke his shoulder and he had to be shot. Eight bullets from a .45 caliber rifle snuffed out his life, but the problem of moving him from the zoo to his last resting place was a problem which taxed the ingenuity of the zoo keepers. The Washington Motor Transfer Co., whose slogan is "anything moved anywhere any time," was appealed to and a Packard 3½-ton truck made good the slogan and carried the pachyderm to his grave. The truck dragged out Dunk's body from the zoo and he was loaded onto the truck. An illustration shows Dunk and his mourners and pall bearers, the weight of the corpse and the men sitting upon his body being 14,460 lb., somewhat in excess of rated capacity of the truck, but the Packard moved this load to its destination without difficulty.

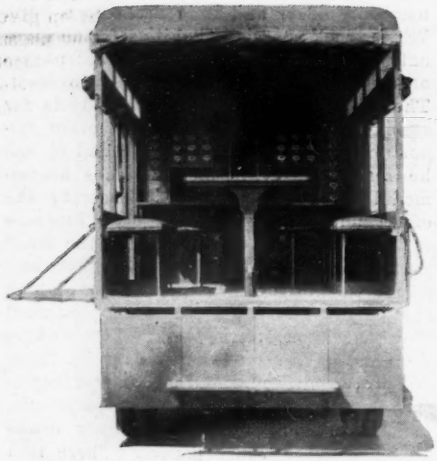
Packard Carries 72-ft. Timbers

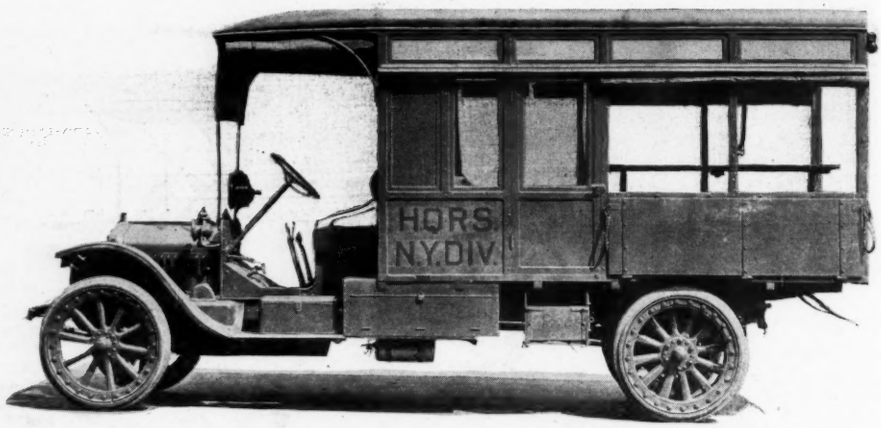
Out in the big, roomy West, where the cutting of timbers up to 100 ft. in length is an every-day occurrence, mill men are not





Two views of a theft-proof pay car used by the Chicago surface Lines. Note how windows are barred and how the interior is finished. This car goes about the city strongly guarded against bandits. It carries large sums of money in a steel vault





To the left and above are two views of an office on wheels used by the New York National Guard at its quarters in Texas. The commanding officer uses it

like the man who built a submarine in his basement only to find he could not get it out without moving the house. They understand the importance of finding out the size timber that can be handled first and then cutting the proper size. The Schwager-Nettleton Mills, Seatfle, Wash., are a typical example of lumbering with characteristic bigness. Washington standards of timber operations are big and they use Packard trucks in their operations. Three timbers such as are shown in an illustration herewith are 72 ft. long and represent a total of 3100 sq. ft. of timber. The truck handled this size easily, even though the timbers are several times the length of the truck.

Carries Cattle 40 Miles to Market

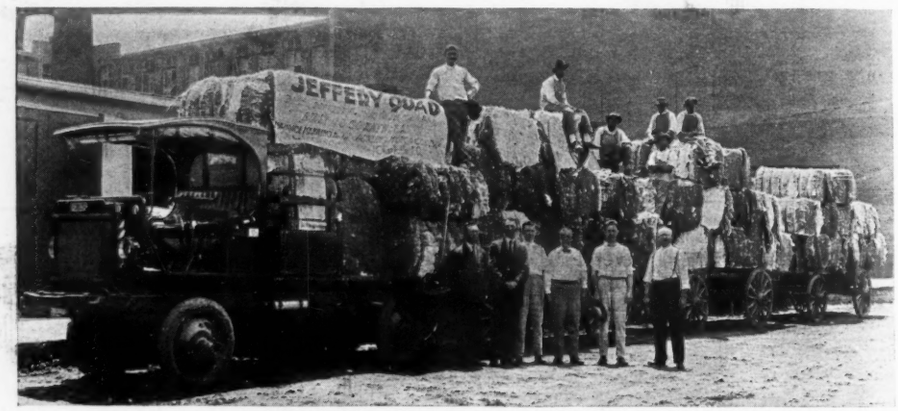
A Washington man now uses a Diamond T truck with a special body to carry cattle to market, whereas he once drove them over the same road. The truck carries six head of cattle forty miles. The time lost in driving the cattle to market under the former custom more than pays for the truck and its maintenance.

Cattle Ride to Death in Style

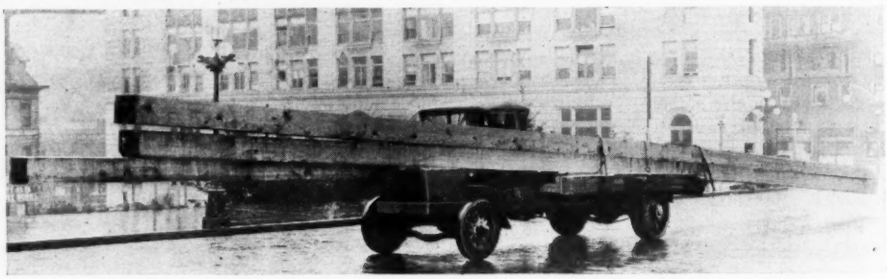
The oxen, slow and easy going, were satisfactory as beasts of burden to the people at one time, but as the world moves faster, horses succeeded oxen and then came the motor truck as man's servant. An illustration herewith shows a reversal of form—oxen hauling the vehicle now is superseded by the vehicle hauling the oxen. This illustration shows how a California stock man handles cattle between the ranch and the market. The truck is a Little Giant and the trailer is a Little Giant reconstructed. The trailer has a special steering device which permits it to follow in the tracks of the truck.

Mack Truck Loads Itself

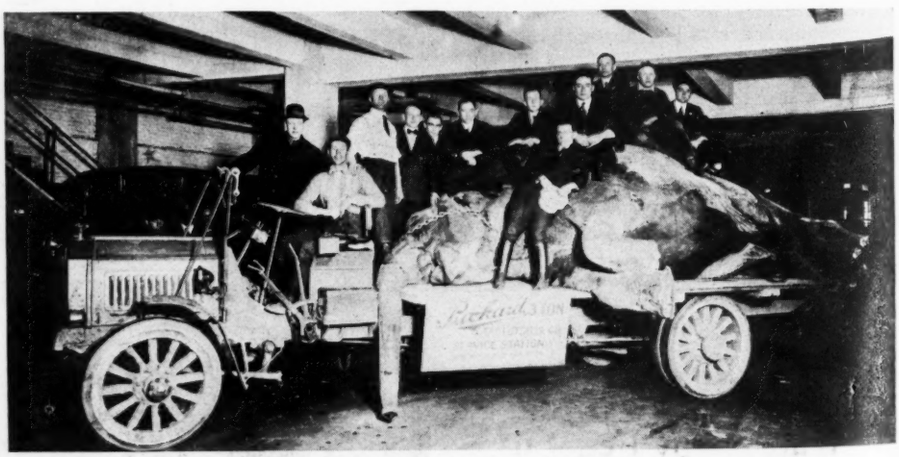
The Hydro Stone Products Co., Chicago, has equipped its 5½-ton Mack truck with an overhead loading track and chain hoist to give practical equipment for handling marble, stone and brick. A screw adjustment on the front part of this appliance keeps the overhead track in a horizontal position even though the truck is standing



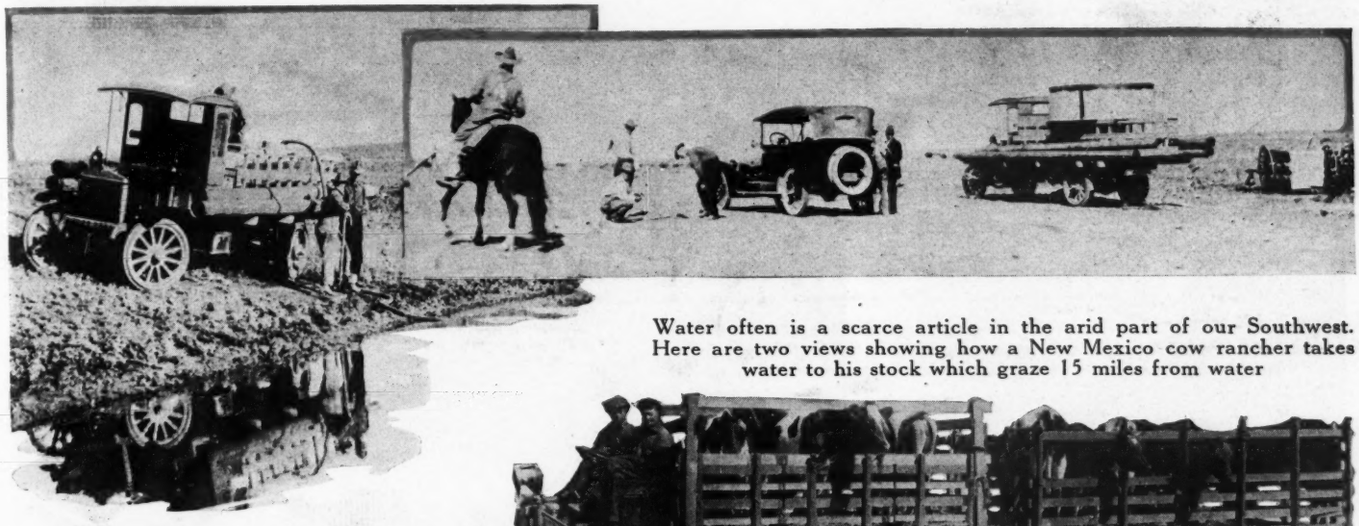
When we think of cotton we think of something bulky and light, but when compressed into bales there is more weight than one would imagine. Here is a load of twenty-eight tons being handled by a Nash 2-ton quad at Charleston, S. C.



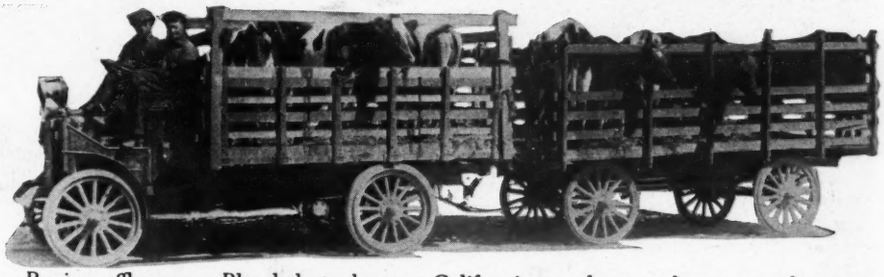
This Packard is carrying three 72-ft. timbers, a total of 3100 ft. of lumber



Packard pulls a pachyderm. Dunk lived many years at the Washington, D. C., Zoo, but old age and eight bullets overtook him, the Packard acting as hearse at the obsequies



Water often is a scarce article in the arid part of our Southwest. Here are two views showing how a New Mexico cow rancher takes water to his stock which graze 15 miles from water



Bovine affluence.—Blooded stock on a California ranch are taken to market in style. A Little Giant truck with trailer as their conveyance

on a grade or uneven ground. The height of the chassis platform and hoisting beam is 11 ft. 6 in., which nicely clears the average city viaduct. The track is 17 ft. long, projecting a little less than 4 in. beyond the end of the platform. The hoisting apparatus is such that it will lift 2 tons, therefore, a 6-ton load can be put on the truck in three lifts. The average length of haul with this truck is about 15 miles. The truck has averaged 45 miles per day in addition to the time of loading and unloading. Last July the truck operated 1675 miles, hauled 366 tons, used 11½ gal. of oil and 375 gal. gasoline, making an average of 4.7 m.p.g.

Making Hay by Motor Truck

If farmers are to put trucks into such use in hauling farm machinery as one resoueeful farmer has made of his Reo truck, it seems likely designers of farm machinery will have to make their product so that it will stand high speed. The instance mentioned is of a farmer who hauls hay, attaching the truck to the wagon tongue and hauling
the wagon to which is attached a hay loader. When the wagon is loaded the loader is detached and the wagon taken to the barn where another wagon is hitched to the truck and another load taken from the field while the first is being unloaded.

Does Work of Seven Teams

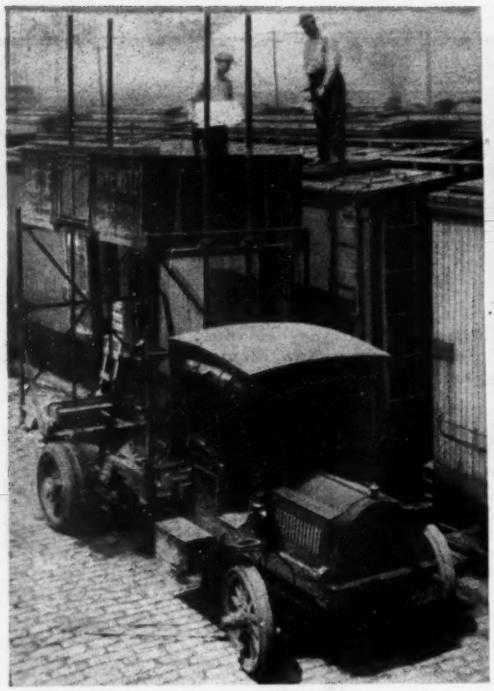
Making eleven trips a day over a 4½-mile haul, carrying a tonnage of 33 yards of crushed stone is the work which a Wisconsin contractor finds would require seven teams, yet a 3½-ton Acme truck does this work. The truck is fitted with a special combination dump and stake body, which has the advantages of both these body types.

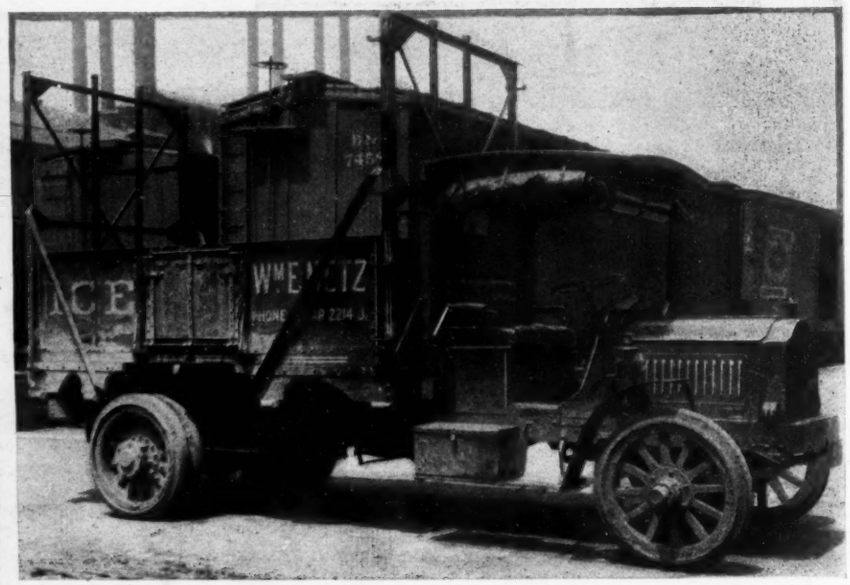
Parched New Mexico Watered by Federal

Getting water into arid territory is a difficult process and around Roswell the country is arid in all the word implies.

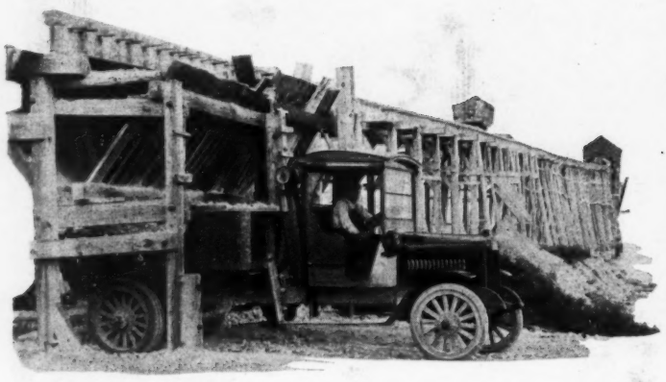
In days gone by cattle were driven many miles to railroads for transportation to packing houses. This practice is becoming obsolete, as this illustration shows

Hauling stone is a laborious job at best, but here is how a contractor equipped a Mack truck to load itself. Three lifts and a load is off or on





This 3-ton Packard has been fitted with a body which can be raised or lowered as necessary for unloading ice into refrigerator cars



These two views show an Acme truck hauling stone. It replaces seven two-horse teams

Worswick & Jones raise sheep and cattle there in great quantities and water is as necessary as the air for stock raising. Some of the sheep and cattle graze out of reach of water and these are kept supplied by a Federal truck fitted with a 350-gal. water tank. Besides the load of water the truck handled other supplies in racks on the sides. Continuous service is necessary and the truck must keep in daily operation. The roads have grades from 10 to 12 per cent. The haul is 15 miles, the nearest "water-hole."

Truck Both Raises and Hauls Poles

During the construction of one of the army cantonments in the South the Southern Bell Telephone Co. showed itself equal to speed work which characterized the construction of our army camps. The telephone lines had to be put up in a hurry. A G. M. C. truck not only hauled in the poles by using a trailer but through the use of a windlass fitted to the body of the truck just back of the driver's seat and driven from the transmission of the truck, the poles were raised as will be noted in the illustration herewith. This is but one

A Reo truck; an Arkansas grocer with initiative; an appreciative public makes this grocery store on wheels a paying proposition

When freight cars were scarce and dealers were clamoring for cars and trucks Kissel solved the problem by driving trucks overland from Hartford, Wis., to Baltimore, and each truck carried a KisselKar

example of how cantonment work was speeded up so that the camps might be in readiness for the national army.

International Truck a Railway Car

The Midlothian Country Club, rendezvous of Chicago business men, is 2¼ miles from the railroad station and to carry members to and from the station the club built a standard gage track to the depot and operated an electric car. This proved expensive so an International truck was purchased and fitted with flanged wheels and a rigid front axle. Whereas the electric car operation cost $3.50 a round trip the expense with the truck is only ten cents.

Loading Platform for Refrigerator Cars

A Pittsburgh ice dealer has equipped a 3-ton Packard truck with a special device whereby he can raise or lower the body by using two elevating screws which are actuated by worm wheels connected by a common shaft to the transmission of the engine. The engine of the truck furnishes the power for raising and lowering the body. In addition to its convenience for loading top-filling refrigerator cars, this truck is particularly adapted for loading from different tiers in the ice house.

Kissel Trucks Take Cars to Dealers

When cars are scarce for handling motor car shipments, manufacturers are called upon for a showing of their best initiative in getting cars to dealers. On this page is shown how Kissel did it. From the factory at Hartford, Wis, to Baltimore, Md., is a long and tedious trip, but Kissel trucks made the trip, each carrying KisselKars to waiting dealers, thus bridging the gap between car shortage and normal service on the railroads.

New York-Philadelphia Truck Service

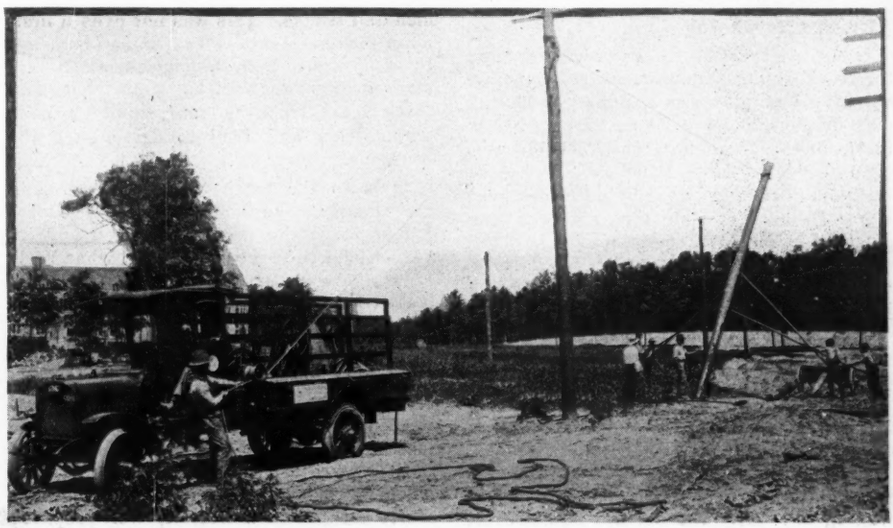
New York and Philadelphia, ninety-four miles apart, are points now connected by a daily motor truck service available to all shippers. This service has just been established by George W. Mink, of Philadelphia, and the power mediums used are three five-ton Pierce-Arrow trucks.

Difficulties in handling promptly by railroad freight the large volume of shipping between the two cities have been greatly increased by the volume of war munitions now being moved daily. A situation of congestion exists that is without precedent. It is hard to get delivery on time. Companies are fighting for freight cars. The situation interferes seriously with the transaction of much important business.

Puts Poles in Out of the Way Places

Some trucks not only haul loads but distribute them in out of the ordinary places. Such is the performance of a Moreland truck in the service of the Los Angeles Bureau of Light and Power. A Moreland truck hauls loads of poles into the mountains, some of these loads being as heavy as 10 tons and the grades excessive. A drum is attached to the rear wheel and this drum is used for snaking logs up on to the turning bolster and also for pulling them up to any desired position on the mountain side as will be seen in the illustration. The city uses a number of these 4-ton Morelands so equipped.

Moreland truck hauls poles into mountains and then distributes them on the mountain side



Building cantonments called for speed last summer, not only in building construction but in everything that went to make our camps the modern cities they are. Here is how a GMC truck aided in building telephone lines at a southern camp. It hauled the poles and raised them as well

As the soldier in uniform always has been a sign of war, so the motor truck is a symbol of modern warfare and shares with the soldier in importance

The Truck—Symbol of Modern Warfare

By Ruth Sanders
Motor Age Editorial Staff

THE motor truck is indicative of modern warfare. Had it not been for the motor truck Paris, these many months, might be a Berlin suburb and the Allied cause—now ours also—hopelessly lost.

The versatility of the motor truck in modern warfare is inconceivable without the testimony of eye-witnesses from the zone of operation. The variety of its work is greater than that of any other branch of the army. For the motor truck there is no period of complete rest, such as the infantry, cavalry, artillery and the various technical branches of the army know. True truck efficiency—and that is what the war has developed—demands that the truck shall be in operation as constantly as possible, so that the truck works for the whole army and for varying needs of the army.

Always a Truck Job

It may be that the trucks ordinarily used for transporting ammunition are temporarily out of a job. For instance, the army may be consolidating its positions with no intention of attacking for a considerable time. Even if these trucks are not needed for ammunition, they are by no means kept idle. Other material, for new gun emplacements, new trenches, shelters, bridges, etc., must be brought up, and all trucks are kept busy on this class of work. When a big attack is to be made soon, these consolidating operations are suspended practically, but soon the trucks are bringing up new troops, supplying food and water for the men in the front lines and increasing the quantity of reserve ammunition back of the batteries.

The beginning of hostilities foresaw no such widespread use of the motor truck in waging the war. Neither did it, however, foresee other weapons and methods that now are deemed essential for the armies on both sides. It was only a few weeks after the war began before the importance of the truck began to be recognized, and it has become greater since. In those early months of 1916, when the German guns were bombarding the railroad lines of communication between the French army of not less than 250,000 men at Verdun and its sources of supply, it was the truck that proved the hero of the siege, and it is the truck to which is attributed the saving of Verdun.

All the fresh troops for Verdun were brought from Bar-le-Duc to Verdun by motor truck. This was a round trip of 70 miles for the truck, but by using 1200 3½-ton trucks, 30,000 men were taken to the front in 4 hr. In addition, the motor trucks brought up supplies of ammunition, food and water. One road only was open to truck travel without certain destruction for men and trucks. This was not even a first-class road, in fact, it was third class, but by strict army traffic regulations a constant stream of motor trucks went back and forth to and from the front, supplying men, ammunition and food to drive back the Germans.

It is to the truck that the refugee in the danger zone looks for help. Motor trucks move the women, children and invalids back to safety and save what little of the town's possessions can be transported readily.

War has proved a refinery for the motor truck, both in design and in construction. The stunt performances which are made from time to time at the factories to test the truck are equalled in every-day service just behind the front line trenches. That the tests are even more severe are evident when it is remembered that a factory starts a truck on a test trip well prepared and in the hands of a skilled driver and mechanic. The truck that undergoes these tests in modern warfare must do so—and do it as well as does the "peaceful" truck—with drivers of very ordinary ability and without a mechanical expert in the near background.

Defects which private service might have stood as only an inconvenience have disappeared under active war service. The motor truck that is a symbol of modern warfare this year is far superior to the truck that was a symbol of modern warfare even in early 1916, when the truck was doing such heroic work in the defense of Verdun. With the obliteration of these defects has come increased truck service in the war.

Truck Reports Verified

The French motor service is organized more completely than anyone would think possible without the assurance of detailed descriptions and photographs of the organization. MOTOR AGE is particularly fortunate in having had the advantage of a correspondent with the armies in Europe, W. F. Bradley, ever since the war began in 1914. Mr. Bradley has kept closely in touch with motor truck service in both the Italian and French armies, serving as an ambulance driver in Italy and as a special driver in France. For this reason it has been possible to verify all information as to the performance of trucks, as well as other motors, in the war, and any assertion as to the importance the motor truck played in gaining the victories of the Allied armies has been substantiated by statements passed by a rigid censorship before being received.

One of the big guns modern warfare has developed practically monopolizes the war services of from fifteen to twenty motor trucks. This is aside from any tractor service in getting the guns into emplacements and has to do directly with the supplying of ammunition. When one considers this one phase of truck service, can there be any doubt of overestimation of the po-

tency of the motor truck to act as a symbol for modern warfare?

Through the motor truck Italy held her wonderful fighting front of 700 miles and more until the recent German reinforcement of the Austrian attack with its disastrous results, which drove Italy back, stretching from the snow-cappd Stelvio, near the Swiss frontier, to the sun-scorched plains at the head of the Adriatic. Italian war conditions are the most varied, and at the same time the most difficult, in Europe. At the Swiss end is eternal snow, where troops fight more than 12,000 ft. above sea level; at the head of the Adriatic is the barren, rocky, sun-scorched Garso plateau, only about 300 ft. above sea level, with a big stretch of level, monotonous, captured territory in the rear. Between these two points lies the extremes of climate and natural conditions along a front about equal to the length of the Atlantic seaboard between Boston and Wilmington, N. C.

Where Snow Never Melts

In the high Alps men have never seen the earth beneath the layer of snow; on the lower Isonzo they have never seen snow except miles away on the hills. While the Italian troops were occupying mountain positions, life was going on as usual in villages only 2 or 3 miles away, according to the map, but there was a high mountain between the trench and the village. Farther down, the enemy dominated the plain, and for 12 miles or more back not a house was free from shell marks, not a church intact, not a civilian to be found, not a road but was likely to be bombarded.

It was in such conditions as these the motor truck along the Italian war front operated, and operated efficiently. That last is the wonder of it. True, sections of this, the most difficult front, were closed to motors, and probably always will be, owing to the topography of those sections. But Italy has brought the use of motors to such a high state of efficiency in sections that can use them, the average is a high one. Italy entered the war better prepared from the standpoint of motor trucks than did any other nation. Several months of preparation before actual fighting put her factories on a basis that made the motor industry in Italy self-sufficing, with enough trucks for the Italian army and a surplus for the other Allied nations.

The statement that ammunition is taken directly to the batteries by motor trucks caused a certain amount of surprise in the early days of the practice, but when one realizes that Italy's trucks has supplied her batteries directly as a general practice and despite the difficulties of her front, far more surprise is feasible. The motor truck service does not stop at the line of batteries but goes considerably ahead of it. Motor ambulances, for example, work within half a mile of the trenches and in some cases follow on the heels of the cavalry and ahead of the bulk of the infantry.

By day the trucks bring up ammunition direct to the big guns, those of 8-in. and upward. Usually these guns are 6 miles behind the enemy's front positions, and unless the country is very much exposed convoys go right up to the batteries without danger of being seen. The smaller the gun the nearer it is to the trenches, the 75-mm. field pieces being only a short distance behind the infantry. Even these guns rely almost entirely on motor trucks for their supply of ammunition. Convoys in this service, however, do not move up usually until night, and then in complete darkness, the work of driving, unloading and storing the shells being done without so much as the light of a match being revealed.

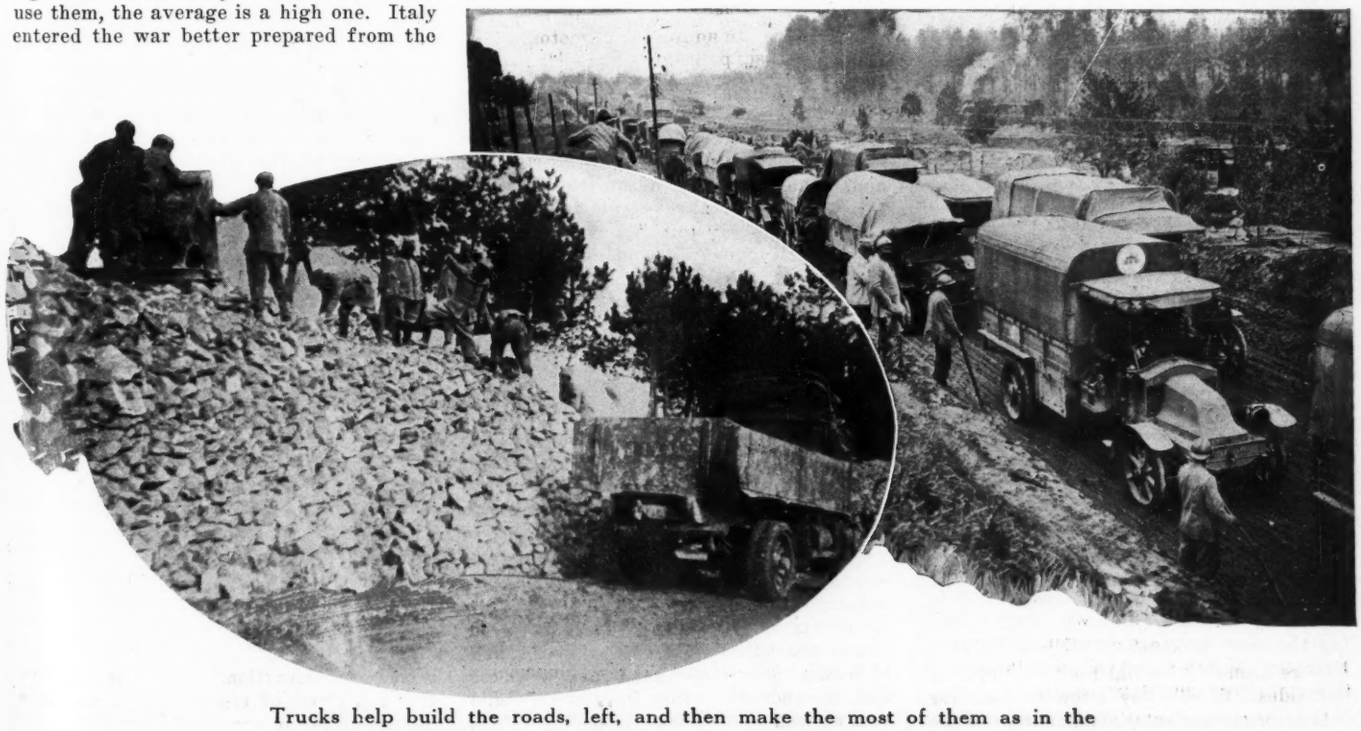
As a rule, trench mortars, aerial torpedos, rifle ammunition and food for the troops in the trenches are all carried up by motor truck. In Italy's case a combination system of motor and mule is used, the bulk of the ammunition being taken to stores as far ahead as possible and then moved on by mule at dark. This is ammunition for the rifles and machine guns for the most part, for it is difficult if not impossible to get material to the big guns if the roads are not fit for motor trucks.

The most strenuous performances of the motor trucks are not in the mountain roads, though it might seem they were. On the higher passes there is small use of infantry, roads are comparatively clear and beautiful examples of engineering feats where they exist at all. Traffic makes all the difference in the world in operating the motors, and naturally roads on the plains bear more troop traffic.

Water and mail are 95 per cent motor-hauled on the Italian front. The train service stops as much as 20 miles back of the actual firing line in many cases, and on the Carso position not a drop of water exists. Convoys of twenty 3½-tonners loaded with shells, timber, girders, cement, pontoon bridge material, food or water roll along the roads on the way to the front continuously.

Verdun and Italy

The truck performance at Verdun stands out with Italy's difficult service. An effort was made to cut off French supplies from the rear to the ring of forts north of Verdun. Just to the east of Verdun the enemy lines formed a deep V into French territory, so that while the German lines were just a few miles to the north of the city, the most advanced German point was 20 miles to the rear of Verdun, in a southeastern direction. This gave the enemy opportunity to shell the lines of communication a very long way to the rear of the Verdun front. As fort after fort fell in that long drawn-out battle of early 1916 and the German army moved nearer and nearer to Verdun until the fall of Verdun began to be hinted, the motors stepped in to see that a breach at this point and the open road to Paris for the kaiser's troops did not come. Thirty-four miles south of Verdun was Bar-le-Duc, the main railroad from Paris to Nancy and good means of



Trucks help build the roads, left, and then make the most of them as in the photograph to the right, which looks as if it might be one of the main arteries

Rows and rows of shells in orderly arrangement await the arrival of the motor truck for transportation to the big guns on the front, left, while some of the same motor trucks take on troops, below, in an emergency in which all trucks are used to rush troops to point of consolidation for attack

communication. But although directly in the rear of Verdun, the point of the German V brought Bar-le-Duc within 20 miles of the enemy and made it the most advanced railroad depot that could be used to any great extent for supporting the troops operating just to the north of Verdun. In short, a zone 34¾ miles deep in which no railroad could operate existed, and that a zone in which the most desperate and prodigal attacks of history raged. One road, 34 miles long, was open to motor traffic.

Trucks were divided into sections of five, and a uniform speed of 9½ m.p.h. maintained. The road was not wide enough for more than two trucks, and the gap between the sections of five were for the faster motor cars of officers, ambulances and telegraphic cars to pass. For five months this constant stream of motor trucks fed the guns and soldiers in the trenches. The French relied exclusively on the trucks to bring up reserves, take away the remnants of battalions, supply the artillery, bring up food and water and remove the wounded. The trucks responded perfectly; there was never a hitch, never a call for more reserves which was not met by the motor service until the time when the attack was broken and the French army drove the crown prince's forces out of most of the positions he had been able to obtain at overwhelming loss.

Saving the Homes

When the fate of Verdun hung in the balance and the entire civilian population had to evacuate, the motor service did this work. After the removal of the civilians and while the town was under heavy shell fire, the motor service saved as much of the household furniture as possible also. Gangs of soldiers who had experience in moving were kept in the town and packed the goods. At night motor trucks moved up to the appointed places, where they found the goods to be loaded, and took them to some town in the rear or to a railroad depot from which the goods could be shipped to their owners. Thousands of dollars in valuable furniture, which otherwise would have been totally destroyed under the enemy bombardment, was saved by the motor trucks. This was going on during the most severe months, too, January, February, March and April, with roads not in satisfactory condition usually.

Since America entered the war, it is interesting to know Americans have been driving the trucks of the French transport service. When America threw off neutrality, the French army motor authorities suggested that these men who had been in the ambulance service enlist in the motor transport service of the French army. More than 1500 young Americans responded at once, manning a complete section of the motor service of the French army and doing the work which only a few months ago was being performed by French soldiers—carrying munitions to the batteries, delivering food to the men in the trenches, taking up reserve troops, bringing back tired or worn-out regiments, removing the immense mass of material required under the conditions of present-day warfare. There are always two drivers to a truck, one taking priority over the other and assuming control under difficult circumstances, though both have the same rank. A section is composed of forty men, who are responsible for from fifteen to eighteen trucks. In the first few months after declaration of war by the United States thirty-six convoy sections of forty men each, one convoy section consisting of fifteen 5-ton trucks, was formed.

Each section carries tools and a breakdown kit. Three sections form a group, to which is attached a traveling workshop mounted on a trailer, hand tools, workbench, vise, drill and a limited selection of spares. Four groups form a groupement, and each groupement has a complete mobile workshop with power lathe, milling machine, drill press, tire press, etc., capable of complete overhauls. Three groupements, 540 trucks, exclusive of touring cars, general service trucks, etc., form a transport reserve. One such reserve, complete in every respect, was formed by American volunteers early this summer.

The new U. S. A. truck is expected to affect war preparations to a large extent, as discussed in other articles in this issue. What it will mean to have a truck with comparatively few parts, and consequently economy in spares, noncombatives at the front and so on, are points to be considered in connection with this latest development of the engineering skill of the country. News that part of the American expeditionary force in France is occupying a sector in the front line sections makes the development of the new war truck symbol of modern warfare doubly vital.

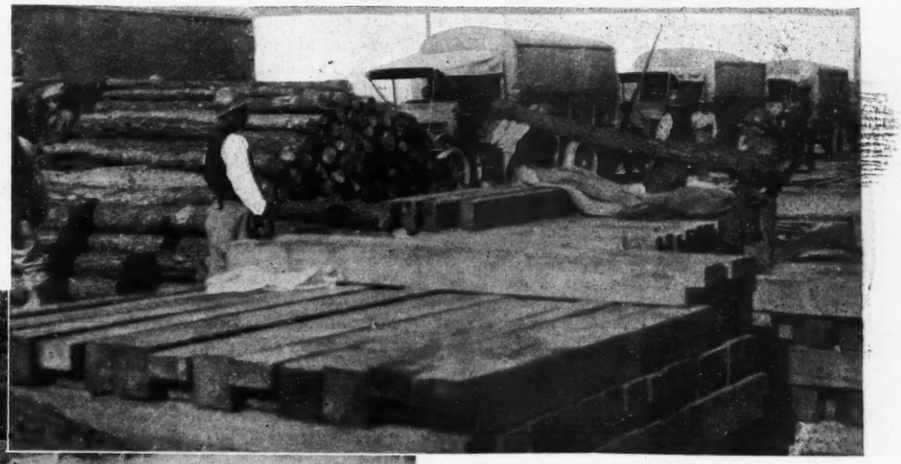
Tests by the U. S.

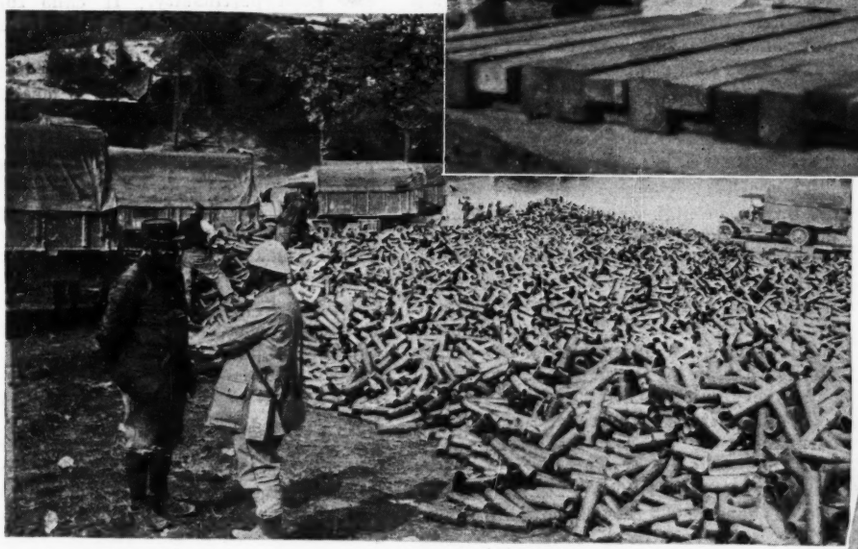
America has made her own exhaustive tests with motor trucks in actual war service. The truck that went to Mexico as part of the punitive expedition which was disbanded in April after eleven months in the field made the country as a whole realize the potency of the truck as a symbol of modern warfare. It accomplished a wonderful revolution in the transportation department of the Army, made a fine market for the factories and resulted in several regiments of truck trains for the work of preparation after the declaration of war.

Shells are carried to the guns, troops are moved, food supplies are taken up; thousands of tons of material for trenches, fortifications, bridges, road maintenance, etc., are moved from point to point by motor trucks. And since all these things are so fundamental to modern warfare, the motor truck stands as a symbol of the giant struggle between the nations of the world, a part of which we are.

In German South Africa the British put motor trucks on flanged wheels and ran them on the railroad tracks in the campaign that captured Germany's colony there

This truck carries building material for temporary houses



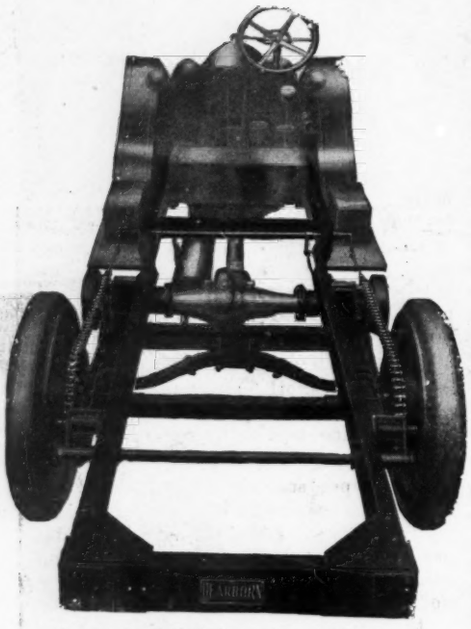


ne truck in war service may carry anything, from troops to timbers

A truck may transport troops up to the firing line, above, or it may be back of the danger zone serving some peaceful purpose as that of the traveling bazaar, left, of little necessities permitted by general headquarters to frustrate high prices usually asked by natives at the front

Truck-Former Business Slackens

Announcement of Ford Truck and Experimental Jobs Depress Conversion Unit



An example of the universal type of attachments designed to adapt almost any car to truck work. It is the Dearborn

TRUCK attachments, for converting passenger cars into delivery wagons and trucks, have not been making the progress in the last four months that was anticipated. There has been a very perceptible slackening of business with nearly all of the makers, in spite of the fact that there seems a legitimate and permanent field for these attachments.

July Began Slack

The present slack dates back to July or earlier and is due very largely to the Ford truck announcement and putting on the market of this truck. The difficulty was largely one of fear on the part of many makers of attachments who had started production in the spring of the present year and in not a few cases were not financially strong enough to face the odds that threatened due to the Ford truck, the shortage of materials, difficulty of securing certain parts and the shortage of Ford chassis in the smaller cities and towns. In the larger cities, where Ford assembly factories are, there was little shortage of chassis.

The immediate effect of the announcement of the Ford truck has been to start manufacturers at work on producing adaptors that can be used in converting any light car into a low capacity truck.

Cooling problems on the converted trucks has been serious, and in most instances manufacturers are supplying auxiliary cooling tanks, together with a water circulator as part of the regular attachment equipment. It seems that many of the difficulties, poor performance, high maintenance costs, etc., have been directly due to the inability of the standard cooling system to cool the engine when operated at full capacity for long periods.

Still another factor that has played its part in the present slack in the business is that there were too many experimental jobs on the market. Too many of these were poorly made and very poorly financed. The attachments were put on the market but gave poor satisfaction, and the buyer was not able to get any commensurate service. The states of Illinois and Wisconsin and parts of Indiana have suffered very severely in this respect, and three or four of the larger producers now agree that these states in the Chicago zone are dead as door nails. The untried jobs have been the worst advertisements the attachment could have received.

It is conceded generally that there is a very legitimate and real field for the truck attachment and that it is going to develop but that there will be a general weeding-out process of a score or perhaps two score of makers who have scarcely any reason for existence and whose production and means for production do not in many cases warrant their existence.

The case bears comparison with the motor buggy, or high-wheel motor car, movement of eight or ten years ago. Too many motor buggies were manufactured in blacksmith shops. Too many of them were made without an engineer ever having been in the so-called factory. The bringing out of one low-priced runabout proved the veritable death blow to the motor buggy, which had a very quick demise.

With the truck attachment the factor of permanency is much greater. Hundreds and thousands of the attachments have been giving good results. It is estimated that perhaps 50,000 attachments are in use, although if you totalled the individual sales reports you would be led to believe more than 100,000 were in use.

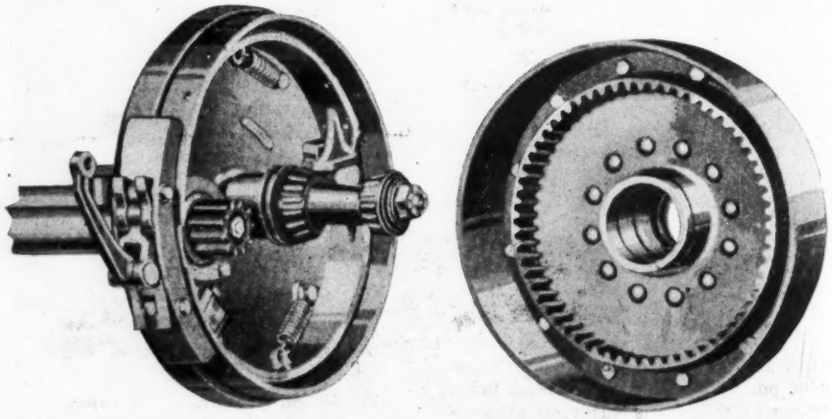
The permanency of the truck attachment must be made good by possibly half a dozen makers, who are well backed financially and who have good factories and are turning out an honest product and mechandising it in a sane way. Unfortunately the attachment industry has received a black eye quite similar to that which the motor truck received in Chicago ten years ago, when there were too many experimental trucks on the market and when many business concerns made investments that proved signal failures and resulted in their keeping off the motor truck for many years. Fortunately for several years Chicago merchants have seen the merit of the truck, and now the curve of truck activity is mounting as it should. The good makers in the truck attachment field have a real burden to bear, call it by whatever name you choose. They must conserve the industry. They must pay the price of the experimenter; they must blot out the bad blots he has made; they must hold the situation in hand. It demands cool courage and good pertinacity. It calls for red blood, and no one with a white liver will have any place in the job.

The trouble with the attachment business to-day is a combination. It is mechanical and it is mental. It is mechanical with those who have built poor jobs. It is mental with many who have made good jobs but who feared the cheap trucks and in some cases laid down instead of manning the front line trenches. There is room for the cheap trucks as well as for the attachments.

Tendency Toward Ford

The tendency to date has been to fit attachments largely to new Ford chassis. Ford is mentioned, because there has been little attachment business as yet with other types, although progress is being made with a universal attachment, and one maker, the Dearborn, states he has fitted his universal attachment to forty-six different makes of passenger cars. In the larger cities, where attachments have sold specially well, 60 per cent have been fitted to new Fords and 40 per cent to old ones.

Attachment makers generally agree at present that business is very spasmodic, good in one section and poor in another. Conditions are generally favorable in the area of Greater New York City, in Ohio,



Drum and pinion for internal-gear final drive in the Iowa converter for Fords

and in the Central States, Illinois and Wisconsin excepted. The dealers handling them are generally those handling trucks or passenger cars.

While many attachment makers have some form of Forditis, others look upon the Ford truck and the Maxwell and Dodge Brothers also, as being excellent stimulants to the attachment business. Such makers of attachments declare business slowed up badly in July when buyers decided to wait for the Ford truck, but since its announcement there has been a decided improvement in the attachment market.

Unfortunately too many of the attachment makers started production in the spring of the present year, and others were just getting into production in July, so they did not have the necessary resistance the present situation demands.

Attachments for Fords generally are made in two sizes by nearly all makers. With several these are 1 and 2-ton sizes, and with some 1 and 1½-ton sizes. An example of the latter class is the Kelley, a Chicago product, which started in business a year ago and builds only for Fords. Special jobs of similar design are made for other cars but not carried in stock or put through in regular production.

Universal Units

Perhaps the best example of makers of attachments for universal use is the Dearborn, also a Chicago product, which has fitted its attachment on forty-three different makes. While other makers declare a universal attachment impossible this manufacturer is going ahead manufacturing and merchandising such a product.

Among truck-making attachments which either are universal or can be made in style to fit any car may be mentioned the Rayford. These are made in sizes up to 5 ton, those of 3-ton and over having one drive. Manufacturers of the Tonford are about to market a universal attachment of such design that it will permit use with any passenger car having the gearset either amidship or in unit with the engine. This is made in 1 and 2-ton capacities and is internal-gear driven.

Ralston & Woodward truck attachments are made to fit all makes of cars and in capacities as high as 3-ton. In connection with these attachments for Fords the Woodward four-speed gearset for Fords can be had. This is a four-speed sliding gearset which replaces the stock planetary type.

Kelley convertibles can be had on special order for use with any car which has the gearset either in front or amidships. The Franklin converter shortly can be had in a universal form which will be adaptable to any make of passenger car.

Maxfer converters can be had for Dodge Brothers, Overland and Maxwell cars. All the above, of course, have special Ford converters.

The Phenix is now made for Fords only but it is expected it will make attachments for Maxwell, Dodge Brothers, and some other makes. This concern reports a good demand from New York, Pennsylvania, Iowa and Nebraska and that all the South is a good possible field, with the abundance of prosperity that it is enjoying at present. This concern's dealers are 90 per cent those who never handle passenger cars or trucks. The company believes 50 per cent of attachment sales throughout the country are for cash and the remainder on time payments.

Credit for popularizing the truck-making attachments for Fords must be given to the Smith-Form-A-Truck, one of the first, if not the first, of the devices to be marketed for the purpose, and the one on which the widest and most progressive sales effort has been made. Many of these have been put out, and so many have given satisfactory service that the educational work of the truck-forming industry can be credited chiefly to that unit.

Practically all outfits of this type are designed to give the Ford a greater carrying capacity, usually by increasing the wheelbase and permitting it to haul greater loads at a lower road speed by changing the gear ratio. In most instances the latter feature is accomplished by using the Ford axle as a jackshaft and driving by chain to special rear wheels and sprockets.

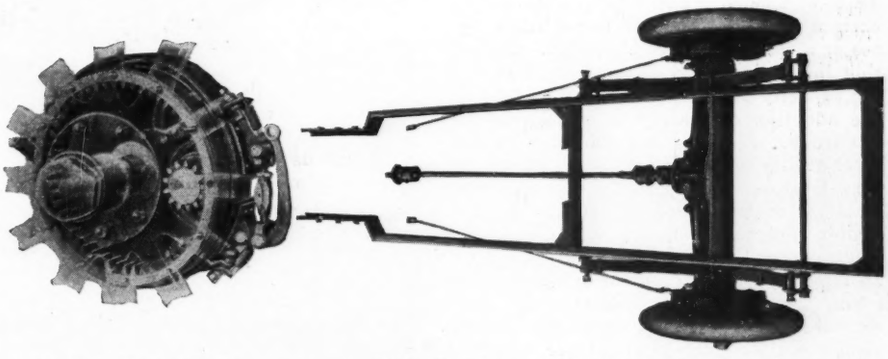
Some of the others use the Ford axle or a special one as a live axle with a pinion on the end meshing with internal gears in special rear wheels or wheel drums, either with or without an increase in wheelbase length. Such ones are the Iowa converter and the Burlington.

Others have a final drive through bevel or worm gear with or without increasing the wheelbase length, but nearly always increasing the frame length to take a larger body possible with a stock Ford. Extend-A-Ford increases the Ford wheelbase to 115 or 130 in. as desired.

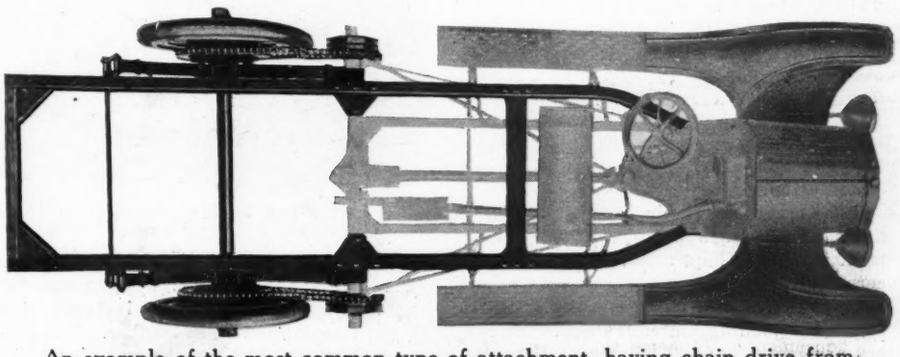
Two or three makers are finding excellent business in making extra springs and axle supports for use in converting a Ford chassis into a delivery wagon, though they use the Ford rear axle and propeller shaft. An example is the Maremont of Chicago, built by an old and well-established wagon-building house. Maremont builds special semi-elliptic springs for the Ford rear, two such springs placed lengthwise, one on each side taking the place of the Ford cross spring. In addition there is an attachment to strengthen the axle. There is no lengthening of the wheelbase or any changing in the back axle. Maremont reports having sold 10,000 of these and that they are selling at the rate of 600 per month. Maremont has another device known as an extension for Fords, which is not an attachment in that the Ford axle and wheels are used. The frame is lengthened and so are the brake connections and the propeller shaft. The radius rods remain the same. These are selling at the rate of 150 per month.

Stableford, another Chicago concern, merchandises extra semi-elliptic side springs to strengthen the Ford rear end, having these made for it by another maker.

Other types, such as the Olsen unit, provide for increased carrying capacity on the Ford chassis by additional or substituted special springs of greater strength. One unit which is used to give the lighter models of a line of heavier trucks, is that of the Chicago Pneumatic Tool Co. Its Ford converter supplies the lightest capacity for a line of trucks ranging to 3½ tons, the others being the more conventional type of truck made wholly by the company.



Kelley shaft drive conversion unit for Fords. At the left is shown a phantom view of internal gear final drive. At the right is the unit ready for attachment

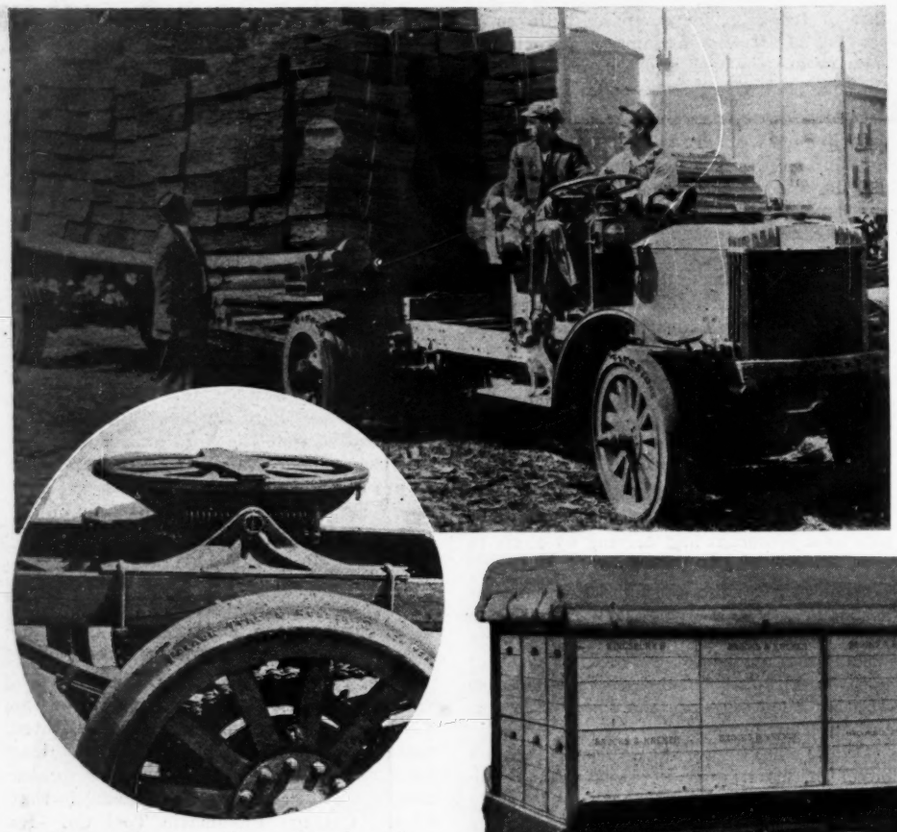


An example of the most common type of attachment, having chain drive from pinions on the stock axle, using all the stock chassis except the rear wheels. This also shows a typical method of application, elongating frame and increasing wheelbase. It is an Overton

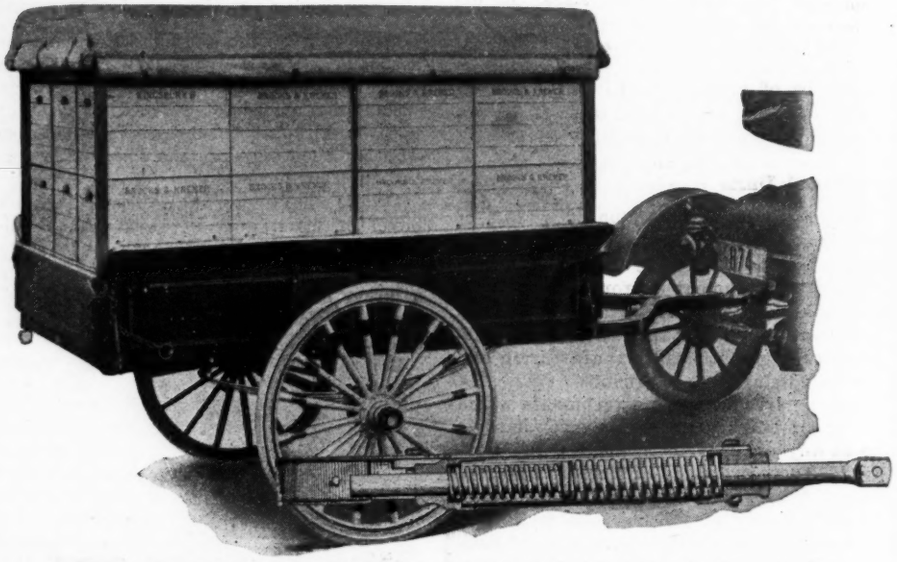
Service and Efficiency Sell Trailers for Industry

Reduction in Hauling Cost and Increased Capacity Factors

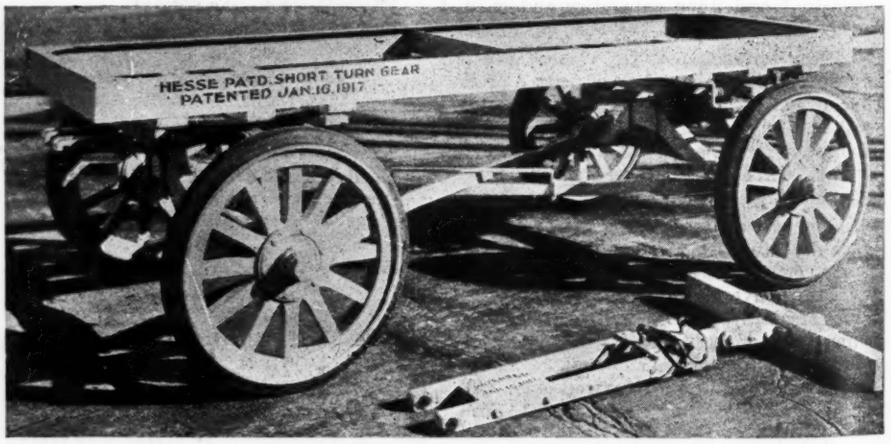
By B. M. Ikert
Motor Age Editorial Staff



Heavy duty truck equipped with Martin fifth wheel. Below, close-up view of the rocking fifth wheel



Puffer-Hubbard Litehaul trailer and sectional view of spring buffer coupling



Hesse 3-ton trailer, showing in foreground double trees for the horse hitch

GROWTH of the commercial trailer industry in the last few years is an evidence of efficiency and returns obtained in certain services from the motor truck by use of a truck-trailer combination. Reduction in hauling costs and increased carrying capacity stand out as ruling factors in the adoption of trailers as auxiliaries to the truck. Economy and efficiency of the truck-trailer combination are assured if consideration is given to the nature of the material to be hauled in relation to the trailer equipment, manner of loading, unloading, etc. Local hauling conditions have an important bearing on the subject; good roads, for example, are essential for successful use of a trailer. Also the grades should not be much over 10 per cent.

Load Affects Cost

Truck operating costs usually are lowest where the load moved is greatest per trip. This is where the trailer shows to advantage, for supposing the truck alone carries 2 tons, by a slight additional cost another ton or two can be carried on a trailer. To use a practical case, we know that a horse can pull a greater load on wheels than he can carry on his back. The freight train is also an example of this method of load distribution.

Time may be saved in loading, for in order that the truck be a profitable investment it must be kept moving. A large concern operating several trucks or tractors can have a fleet of trailers, some of which are at the loading platforms while the others are being hauled. Extra trailers can be put in or out of service quickly and when not in use represent a much smaller investment than the same amount of carrying capacity in the form of a truck. Use of individual trucks, as by grocers, for example, has failed in many instances due to the time consumed in loading. One grocer by the use of six trucks and nine trailers has cut down his loading time from 2 hr. to 5 min. What this man has done is being done in many other cases, for the trailer practically is adapted to most lines of business.

One thing to remember in selecting a trailer is that the latter must be able to run just as fast on a long haul as the truck that is to pull it, for a trailer that by its construction limits the speed of the truck immediately offsets the advantages of the

truck-trailer combination. This does not necessarily mean that the loss of time occasioned by reduced speed in congested traffic nullifies the usefulness of the trailer. The trailer is a particular boon to industries where goods of relative light weight and great bulk have to be carried. On the other hand, we find trailers equally suited to handle heavy machinery, timber, etc.

The best way to use only one trailer is to load it while the truck makes the trip alone, picking up the trailer every other trip. Two trailers can be used to better advantage, while three make an ideal hauling unit. With the latter combination, the truck can be used as a tractor only and kept in constant motion, for one trailer can be kept at each end of the haul, while the tractor is in transit with the third.

In congested zones, narrow alleys, etc., the question of reversing a tractor is an important item. The reversible feature of some of the trailers is a great saver of time and labor, for with this type it is not necessary to turn around—the truck may be attached at either end. The only time lost is that of the truck in turning and backing up to the trailer to receive the coupling link. With a semi-trailer reversing the load into any desired position is done as easily as with a team of horses. Special construction for reversing is called for in a four-wheel trailer.

One of the disadvantages urged against trailers generally is that they lengthen the total wheelbase and consequently the entire outfit—tractor and trailers—consumes more time to pass a given point than a single truck would and takes up more space. This naturally would slow up traffic in large cities. Chicago and other large business centers have passed ordinances prohibiting the towing of one vehicle by another unless the second car is disabled. It does not apply to the so-called semi-trailers. No such ban is placed on the use of trailers in smaller communities and rural districts.

Two- and Four-Wheelers

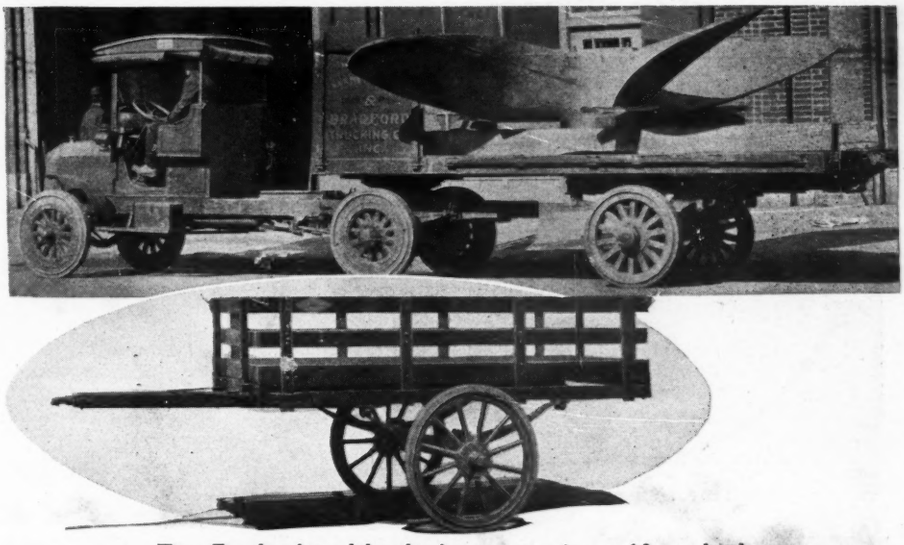
Trailers according to their design can be divided into three classes:

1—Two-wheel trailers.
2—Four-wheel trailers.
3—Semi-trailers.

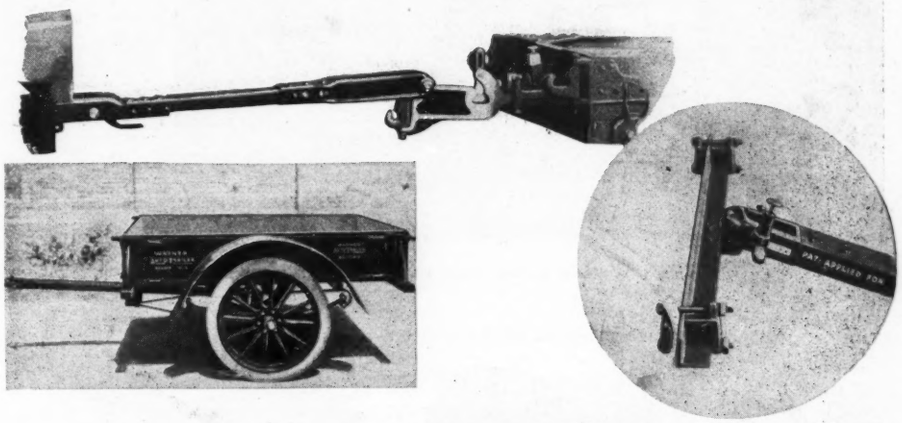
Two-wheeled trailers are those which have the load balanced over the axle and are the kind generally used where the loads are comparatively light. The semi-trailer also has two wheels but the difference here is that the front end of the load rests upon the tractor or truck pulling it.

A large field of utility lies before the four-wheel trailer. It can be made in wheelbase lengths to meet most conditions; in fact, it is flexible in all load-carrying respects. The four-wheel trailer has shown itself useful in all lines of business, and we see them in road construction work, foundry work, factories, general transportation lines, etc.

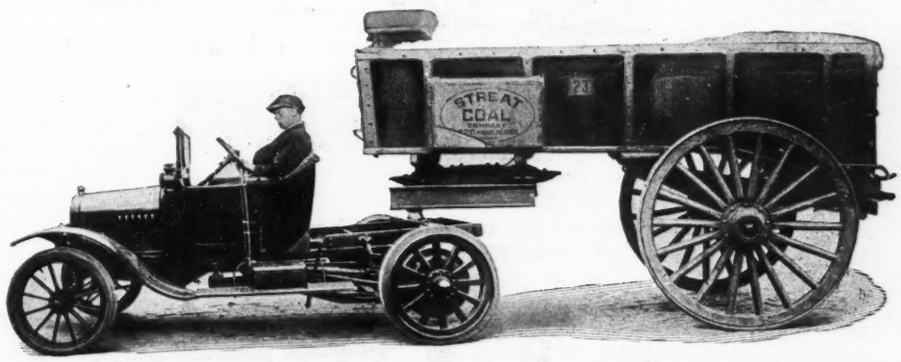
Various means are employed to attach trailers to the pulling vehicle, whether this be a truck or passenger car. Some of the devices consist of ball and socket constructions, while others incorporate some form of spring shock-absorbing scheme. Still others consist of a sort of universal joint construction. Some trailer makers



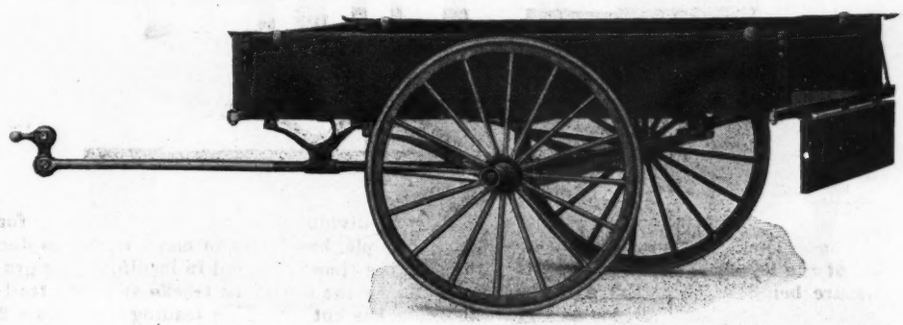
Two Fruehauf models, the larger carrying a 10-ton load



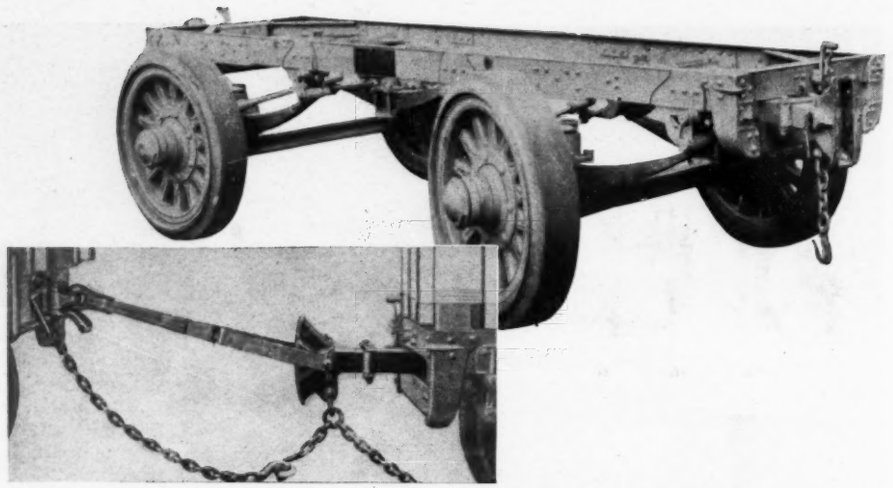
One of the Warner two-wheelers, showing in detail the hitch



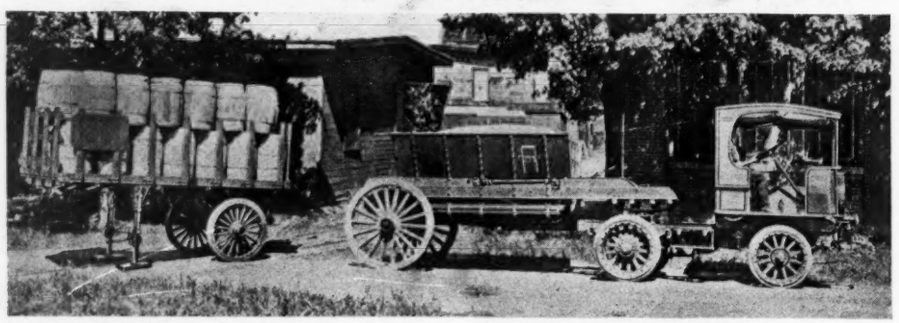
Knickerbocker semi-trailer, showing it with a Ford car



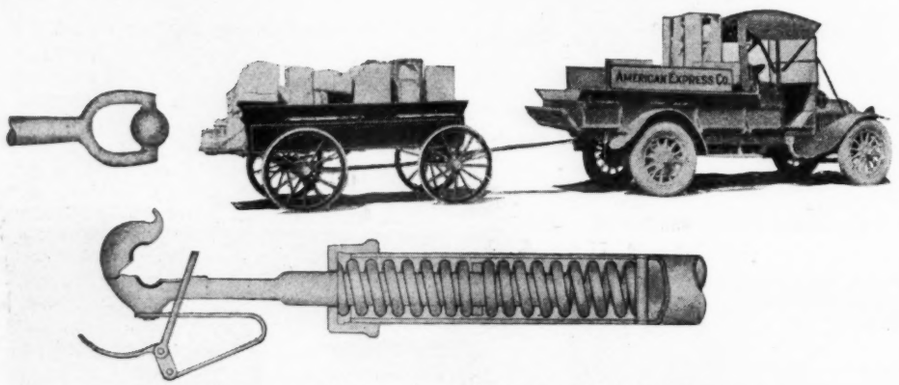
Emerson-Brantingham trailer, with a ball and socket hitch



Troy trailers, pulled from either end, showing coupling



Two Watson types, one ready for the next trip



Miami in use, and ball and socket hitch with spring buffer

A short turn with a semi-trailer, the King

point out the necessity for buffer springs in the drawbar, so that when starting or stopping any consequent jar is absorbed by these springs, thus saving unnecessary strains on the trailer and tractor vehicle. There is not this necessity for springs on the semi-trailers where the load rests on the tractor vehicle, on the fifth wheel construction.

Experience has shown that for speeds over 15 m.p.h. the trailer must be fitted with pneumatic tires to prevent its being pounded to pieces over rough going or brick pavement. This is especially true of the lighter forms of two-wheel trailers. Steel wheels were advocated some years ago and were entirely suitable for some of the slower going vehicles, but modern tendency is to fit pneumatic tires to the lighter vehicles and solid truck type tires to the heavier ones. Some municipalities have passed ordinances prohibiting the use of steel wheels on trailers. Many of the four-wheel trailers which resemble wagons are equipped with the conventional form of wood wheel fitted with steel tires.

Some companies have seen fit to make convertible models of trailers, that is, trailers which normally can be used with a truck or passenger car, and in case the latter are disabled, quickly converted for hitching to a horse or team. This means a whole lot to the farmer. For example, he can use the trailer horse-drawn in the orchard, plowed field, etc., where it is difficult for the motor car to pass, and when he wishes to take a load to town merely substitutes the car for the horse. The change from one to the other takes just about 5 min.

Chassis Alone if Desired

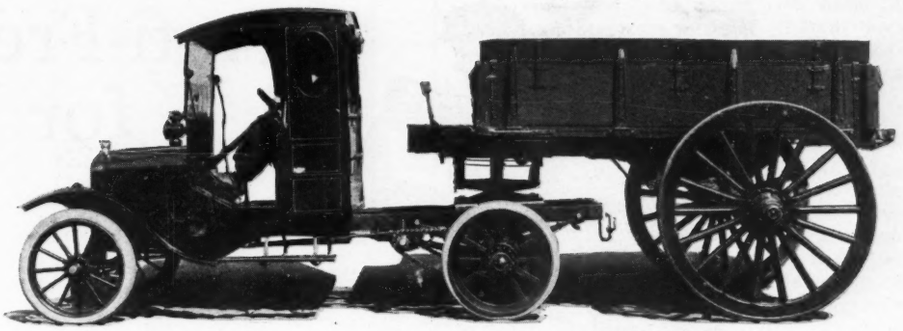
Still other concerns supply a standard trailer chassis and furnish for it a line of bodies to suit any requirements, from a camping outfit to a special hearse body. Altogether there seems to be no limitation placed upon the utility of the trailer, for we see a constant increase in its use in all three forms. It is hard to state just what type of trailer ultimately will dominate the field, but the consensus among the makers seems to be that the two-wheeler vehicle intended to be used in conjunction with the passenger car in rural districts eventually will prove the most popular.

The prices of trailers vary from, say, $100 for a 1250-lb. capacity, two-wheeled type to the heavier forms of semi-trailers selling anywhere from $500 to $1,600 and capable of capacities up to 5 tons. The cost of operation is small. Tires, it is stated, will give from 30 to 50 per cent more mileage on the trailer than on the truck, as there is no skidding or driving strain, simply the steady rolling movement. About the only thing requiring attention are the bearings on the axles, which must be lubricated from time to time the same as the wheel bearings of a car. It is also important to lubricate the springs supporting the body and any sliding or rotating parts of the steering or hitching device.

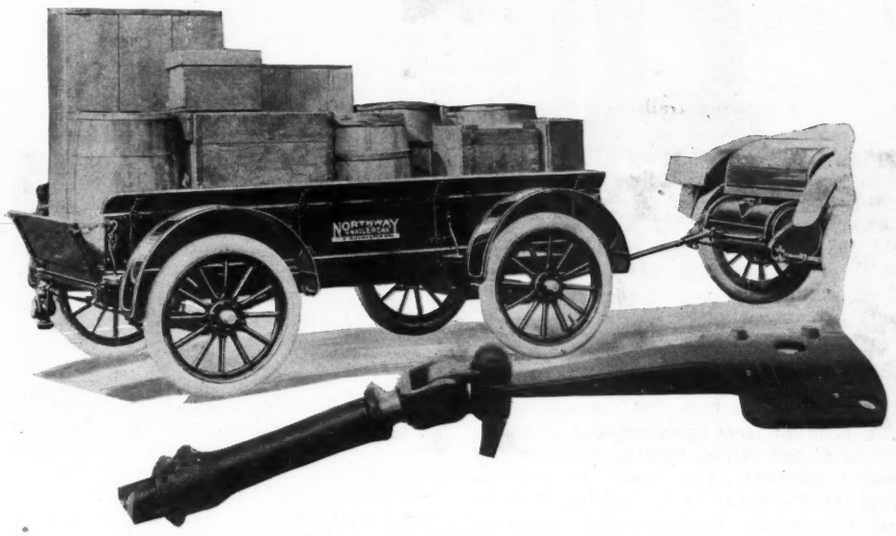
Some trailers steer with all four wheels and have the advantage that they can be turned in a very small radius. In fact, one make is capable of describing a letter S in a space only four times its length. Obviously vehicles that steer by this method can worm their way in and out of traffic

much better than where only the front wheels are pivoted.

The semi-trailer is looked upon generally as a six-wheel truck and requires a fifth wheel construction for mounting on the tractor or truck. Over average road conditions the semi-trailer will handle from three to four times its rated carrying capacity. It is possible to get the same results from three semi-trailers and one truck as from three trucks of treble the carrying capacity of one. For example, a job calling for three 5-ton trucks can be handled by one 2-ton truck and three 6-ton trailers. The greatest thing in favor of the semi-trailer is its short turning feature and the fact that a fleet of them can be operated with one tractor, whether the latter be a truck or roadster.



Union Motohaul attached to brick dumper having 6000-lb. capacity



Side view and coupling details of the Northway trailer

Number of Women Workers on Increase

LANSING, Mich., Oct. 26—Although there has been a great increase in the number of men employed in Detroit factories and workshops, the women so employed are increasing almost three times as fast as the men, according to statistics compiled by Labor Commissioner Richard H. Fletcher, in factories employing more than 500 persons.

Comparing the pay rolls of the factories mentioned as of May, 1916, and May, 1917, Mr. Fletcher finds that the increase in men was almost 7 per cent, while the increase in the number of women employed in the same factories was 17.6 per cent. In 1916 these factories employed 82,359 men and 6029 women. In 1917 the same factories employed 88,125 men and 7095 women.

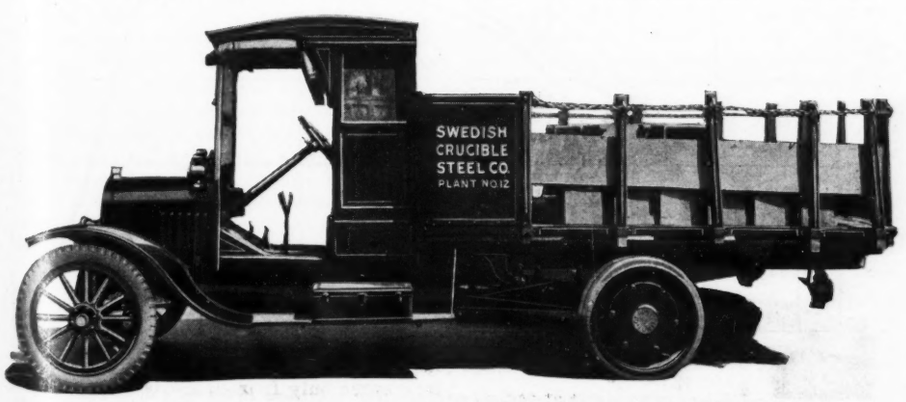
The gain in women is shown in the higher positions. In 1916 there was but one woman superintendent; now there are two. In 1916 there were forty-four forewomen; in 1917, sixty-four. Seventeen girls under the age of sixteen were employed in 1916; forty-six in 1917. Of these more than sixteen, the factories in 1916 employed 1725 women in offices, while this year there were 2160. The other women employed in 1916 numbered 4242 and this year 4813.

The men employed, numerically speaking, showed these increases: Superintendents, twenty-five; foremen, 641; boys under sixteen, eighteen; unskilled workers over eighteen years of age 5664. There was a decrease of one in the number of boys between sixteen and eighteen years of age; a decrease of twelve in men over eighteen employed in offices; and a decrease of 569 in skilled men over eighteen used in skilled labor.

Despite this decrease in the latter line, there was an increase in the aggregate daily wages paid skilled labor, over eighteen amounting to $33,067.43. The unskilled labor received $31,947.77 more daily this year than was paid in 1916.

In the total daily wages paid women, all classes show increases. For superintendents the increase is $3.20. For forewomen, $45.25; girls under sixteen, $51.60; over sixteen in offices, $1,438.98; women over sixteen, $1,748.10.

The total number of men and women employed in the factories as returned to the department in 1916 was 88,388 and in 1917, 95,220. The total daily wage for all in 1916 was $284,071.99 and in 1917, $355,942.88.



New 2-ton Olsen truck equipment which sells complete at $1,025. Owing to a mix-up of cuts, the truck shown last week was not the Olsen

ARMLEDER USES ROSS GEAR

The Armleder truck, described in MOTOR AGE Oct. 18, is equipped with Ross steering gear made by the Ross Gear & Tool Co., Lafayette, Ind., and not a Gemmer, as stated. The Ross company has been making steering gears for Armleder for the last two years and has the contract for next year also.

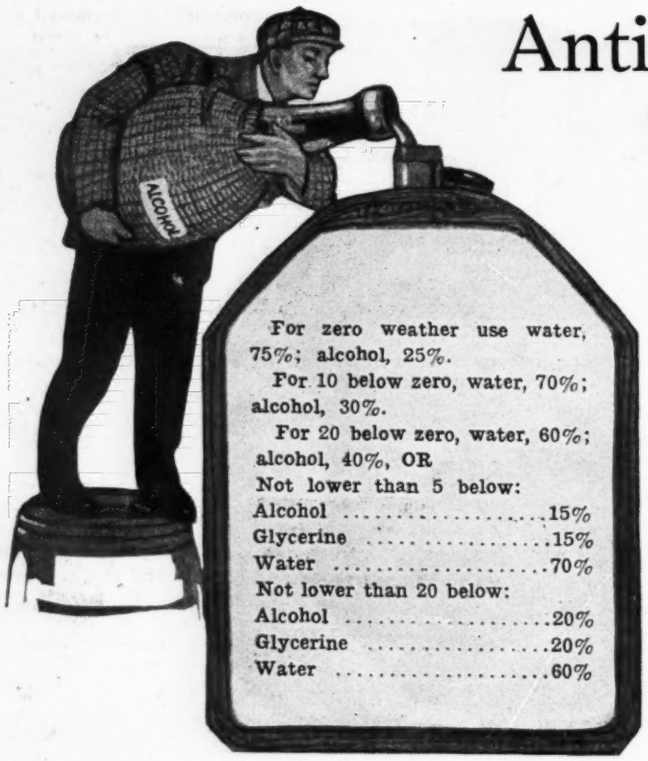
MINIGER GETS W.-O. OFFICE

Toledo, Ohio, Oct. 26—C. C. Miniger, president of the Auto Lite Co., has been appointed a vice-president of the Willys-Overland, Inc., effective Nov. 1. Miniger will devote his time to the Toledo plant. The change was made so that C. A. Earl, vice-president, can give more time to assisting John N. Willys, president, in the general management of Overland business. The Elmira plant of Willys-Overland is working night and day on airplane work and is employing 4000 men.

1788 JORDANS FIRST YEAR

Clveland, Ohio, Oct. 26—The Jordan Motor Car Co. has issued its first annual report. Jordan started production in September, 1916, and in the first year built and sold 1788 cars, valued at $3,189,600. This was accomplished on a working capital of $300,000.

Anti-Freeze-Mixtures for Radiators


ALCOHOL
For zero weather use water, 75%; alcohol, 25%.
For 10 below zero, water, 70%; alcohol, 30%.
For 20 below zero, water, 60%; alcohol, 40%, OR
Not lower than 5 below:
Alcohol 15%
Glycerine 15%
Water 70%
Not lower than 20 below:
Alcohol 20%
Glycerine 20%
Water 60%

ALCOHOL is best for an anti-freeze solution from the viewpoint of action on metal and rubber hose connections, but war conditions have raised its price so that there is bound to be a falling off in its use this winter for motor car radiators. Many owners undoubtedly will use some of the forms of anti-freeze compounds put out by various concerns, inasmuch as the price of these is far below that of alcohol. Calcium chloride solutions unneutralized, in fact, any soluble salts are said to have a harmful effect on metal and are to be avoided. Glycerine helps to prevent evaporation of the alcohol and therefore is often used with it in making up an anti-freeze solution. Wood, grain and denatured alcohol can be used and each has its advocate. Grain alcohol is best, owing to its purity, but the cost is prohibitive.

The anti-freeze substances on the market are put up in convenient shape to use. Some are liquid while others come in powdered form in pasteboard cartons. In nearly all cases the car owner is advised to clean out his radiator with a hot soda solution before using the anti-freeze mixture. Rust is bound to form in small sand holes of the engine jackets and this must be cleaned out before the anti-freeze compound is put in.

The owner should know the boiling point of whatever solution he uses, for on some warm winter days, the temperature may be sufficiently high to vaporize the anti-freeze compound and it will be lost, reducing the low temperature capacity of the water. The chart in Fig. 1 shows the boiling temperatures of various anti-freezing solutions. Note the boiling temperature of all increases with the weakness of the solution, excepting where glycerin is used. Wood alcohol boils as low as 140 deg. with solutions of 47 per cent and greater, while it will boil at 170 at all strengths above 30 per cent.

In Fig. 2 is shown the freezing temperatures of two solutions, one a glycerin-water and the other a glycerin-alcohol-water combination. For equal volumes the former gives a much lower temperature. Alcohol must be added from time to time to compensate for evaporation if it is used; glycerin does not evaporate.

Johnson's Freeze-Proof made by S. C. Johnson & Co., Racine, Wis., is powder put up in 5-lb. packages, which sell for $1.50. One package is sufficient to protect a Ford car to 5 deg. below zero. Two packages are used for larger cars to protect to 5 below zero, while three will prevent freezing at 25 deg. below. It is stated that Johnson's Freeze-Proof will not affect metal, rubber, packing, etc. Before using it, the makers advise cleaning the radiator with a solution of washing soda to remove dirt, scale, etc. This also will show up any leaks there may be in the hose connection or radiator. After this the radiator is cleaned with clear water and is ready for powder. This is dissolved in 2 gal. of hot water, stirring constantly. The whole is then put in the radiator and the latter filled with clear water. One application is said to be sufficient for all winter. It is necessary to replenish only where the Freeze-Proof is lost through the overflow or leakage. The boiling point of Freeze-Proof and water is from 235 to 250 deg., depending on the amount mixed with the water. As the water in the radiator evaporates it is necessary to refill with it only, inasmuch as the Freeze-Proof remains in its original quantity. The makers do not advise the use of Freeze-Proof in Knight engines owing to their construction.

Aksala is the name of a new anti-freeze solution recently brought out by the Aksala Co., Chicago. The solution comes ready for use and should be used full strength. In other words, if a radiator holds 5 gal., the same amount of Aksala is put in. The solution has a slight amber color and boils at 256 deg. Fahr. At 15 deg. below zero Aksala flows freely. At 23 deg. below it flows more slowly, while at 45 below, which is the chill point of oil, the solution is thick but not frozen, it is said. It has no action on metal and is said not to throw down a precipitate, being a clear solution which will not evaporate. Replacement is made necessary only through leakage. It is unnecessary to change any hose connections or draw off the liquid in the spring, for being a neutral solution, the company states, it is preferable to rain water. The list price of Aksala is $1.25 a gal.

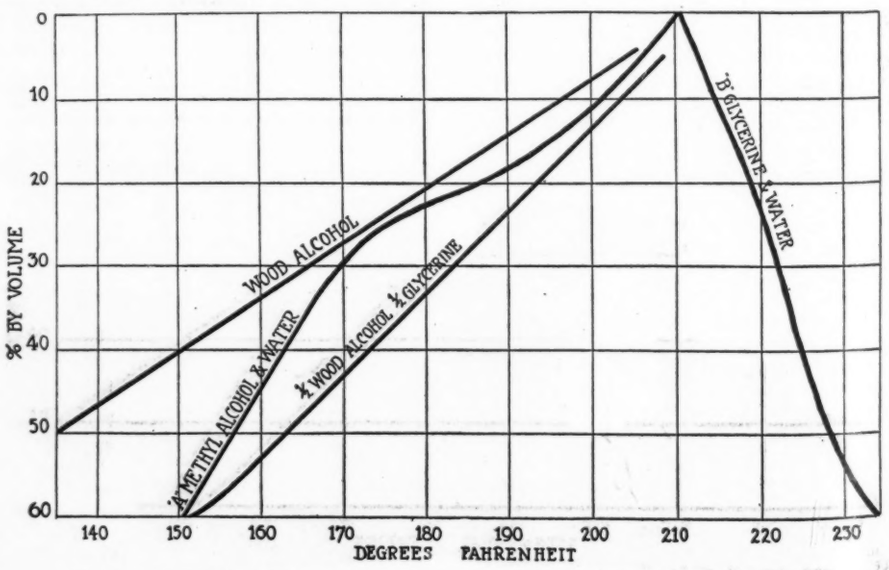


Fig. 1—Boiling temperatures of various anti-freezing solutions listed in volume, percentage and degrees Fahrenheit

Thermite, made by the Northwestern Chemical Co., Marietta, Ohio, when mixed with an equal portion of water will freeze at 16 deg. below zero. It comes in liquid form and at low temperatures crystals may form, which can be melted for use and prevented by keeping the radiator properly filled. Thermite is mixed with water before pouring into the radiator. This concern also advises cleaning the radiator before using Thermite. The latter has a tendency to uncover leaks by removing the sediment that temporarily has sealed them. A tag is furnished the car owner to fasten to his radiator drain warning the repair man that the radiator is protected and must not be drained.

Frezaline Solution

The Frezalene Mfg. Co., Chicago, is putting out a non-freezing solution called Frezalene, put up in 1-gal. cans. It is said the liquid will not freeze at 50 below zero and contains no alcohol or glycerin. It can be used the year round and has no effect on metal, paint, rubber, etc. In fact, it is said to cleanse radiators. It is necessary to refill with water only from time to time, as the Frezalene does not evaporate. Before putting it in the radiator, the solution must be well-stirred with water in the following proportions: 1 gal. Frezalene to 5 qt. water—will freeze at 10 deg. above zero; 1 gal. Frezalene and 3 qt. water—freezes at 5 below; 1 gal. Frezalene to 2 qt. water—freezes at 17 below zero; 1 gal. Frezalene to 1 qt. water—freezes at 46 deg. below. The price is $1 a gal.

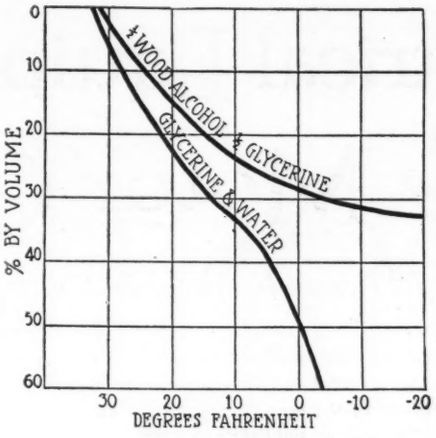


Fig. 2—Freezing temperatures of two solutions

Jewel Non-Freezing Solution, made by Wadsworth-Howland Co., Chicago, comes in a can and is mixed with water. There is no particular course to pursue outside of adding the solution in proper proportion. There is no necessity for drawing off the combination during the entire winter. There is little evaporation, the company states, except where a car is used for a long time continuously. This heats the solution and causes some evaporation. At the end of the season it is advisable to draw off the solution and give the radiator a good cleaning with water. This is necessary because the solution will loosen up rust accumulation in the water system.

Rie-Nie Winter Fluid is a calcium-chloride compound to be mixed with water in various proportions to resist different temperatures. It is made by the Durkee-Atwood Co., Minneapolis, Minn., and is put up in 1-gal. cans, which sell for $1.25. Winter Fluid and water properly mixed will last the entire season, it is said, and it is necessary to add water only to bring the solution back to its original strength. The solution will expand some when heated, and the company advises a rubber gasket in the radiator cap when the latter is screwed down. The owner is cautioned also not to remove the fan belt or entirely cover the front of the radiator. In using this solution, a white deposit will form wherever there is a leak, or loose hose connection. This deposit is harmless, it is stated, and can be removed with water.

Marvins Compound

Marvins Anti-Freezing Compound is a light pink colored liquid that will not freeze at 10 deg. below zero or harm the metal of the engine or radiator. It comes ready for use and the whole water system is to be filled with it. This, the company states, prevents the owner from getting the wrong proportions when mixing his own solution. The radiator is cleaned before using with a hot soda solution. Sufficient room is left in the top of the filler neck for expansion, due to heat, and the radiator front should not be obstructed so the water will boil, for the solution has the same boiling point as water. It is made by the Imperial Oil Co., St. Louis, Mo., and a 3-gal. can costs $2.50.

Eat Plenty—Eat Wisely—but Without Waste

Wheat and Meat Substitutes

MEAT and wheat. These two must we conserve for our Nation's sake. In the degree to which we carry our conservation so far will the Army and Navy be enabled to fight more efficiently, for our thrift is our fighters' gain.

Eat Plenty—Eat Wisely—but Without Waste! Let the slogan of the Food Administration be your slogan. We must save milk, sugar and fuel as well as wheat and meat, for soldiers at the front will need them all, but meat and wheat come first. For that reason we have our wheatless day, our meatless day to start with.

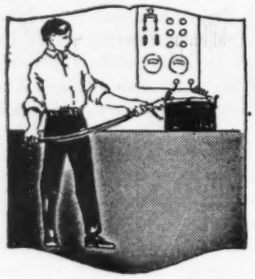
We have two clear duties: First, to substitute other commodities we have in abundance for those that we can ship; second, to eliminate every waste. If in this way we can reduce the average consumption per capita 1 lb. of wheat flour, 2 oz. of fat, 7 oz. of sugar and 7 oz. of meat a week, and if we use our milk and butter carefully, without waste, we can maintain our country on a full diet and still supply the tremendous deficiency in our allies' food. For this reason no person who advocates the slogan of the Food Administration and observes its directions, which are the result of careful estimates, can feel that he or she are knights of a hopeless cause. Food thrift will gain the purpose sought, food for our soldiers and food for our allies.

Meat and wheat—how best conserve them without taking away the fundamental sources of nutrition. In the first place, eat fish in place of meat as often as possible.

Eat fresh fish if you are near the source of fresh fish, but do not expect to buy at a low price fresh fish shipped by express for long distances on ice. Eat the locally-caught fish and do not all use the same kind. "There's many a fish that has never been caught still swimming in the sea" you know. Eat salt fish wherever you are. Eat salt herring, salt mackerel or other salt fish for breakfast if you are in the habit of eating meat then. Eat smoked fish. Smoked herring, smoked eels, smoked bowfin, smoked shark, smoked carp—the last three are new on the market. Write to the Bureau of Fisheries at Washington, D. C., for recipes and you will get them.

As to wheat MOTOR AGE has published data on substitutes from time to time. The following menus for a week, illustrating the possibilities of substituting other cereals for wheat, given below were prepared at Columbia University. After looking them over, you will agree, no doubt, that a wheatless week has its advantages of attractiveness. After you try them you will be sure to agree.

1—	*Breakfast:*	Fruit, omelet, eggless cornmeal muffins, coffee.
	Dinner:	Roast stuffed veal, gravy, boiled rice with chopped parsley, peas, asparagus salad, ice cream, sponge cake.
	Supper:	Fruit salad, steamed brown bread, cocoa.
2—	*Breakfast:*	Fruit, oatmeal, toasted cornmeal muffins, eggs, coffee.
	Luncheon:	Virginia corn bread with cheese, vegetable salad, brown bread, tea.
	Dinner:	Cream of asparagus soup, cold veal, new potatoes, string beans, Spanish cream.
3—	*Breakfast:*	Fruit, puffed rice, eggs on toast, coffee.
	Luncheon:	Hominy with tomato sauce, brown bread, stewed fruit, oatmeal cookies, tea.
	Dinner:	Prowned beef in casserole, samp baked with cheese or milk, lettuce and cucumber salad, rye bread, rhubarb, tapioca with cream.
4—	*Breakfast:*	Fruit, farina and cornmeal (half of each), rye bread toast, eggs.
	Luncheon:	Cream of lettuce soup, tomato jelly salad, eggless cornmeal muffins, marmalade, tea.
	Dinner:	Bean or pea loaf, spinach, scalloped tomatoes, brown bread, orange, date and prune salad, fruit whip, hermits.
5—	*Breakfast:*	Fruit, oatmeal, Johnny cake, scrambled eggs, coffee.
	Luncheon:	Samp baked with cheese, baked bananas, green peas, rolls, stewed rhubarb, oatmeal cookies, tea.
	Dinner:	Barley soup, broiled steak, rice baked with peppers, creamed carrots, baked Indian pudding.
6—	*Breakfast:*	Fruit, hominy, French toast, eggs, coffee.
	Luncheon:	Scalloped corn, rice fritters, rolls, fruit, tea.
	Dinner:	Baked fish (or nut roast), mashed potatoes, string beans, lettuce and cucumber salad, chocolate blanc mange.
7—	*Breakfast:*	Fruit, corn flakes, Virginia spoon bread, coffee.
	Luncheon:	Scalloped fish (if left over), fried hominy, asparagus salad, cup custard.
	Dinner:	Beef loaf, Turkish pilaff, banana fritters, lettuce salad, fruit cake.



Electrical Equipment of the Motor Car

By David Penn Moreton & Darwin S. Hatch.

Editor's Note—Herewith is presented the sixty-seventh installment of a weekly series of articles begun in MOTOR AGE *issue of June 29, 1916, designed to give the motorist the knowledge necessary to enable him to care for and repair any and all of the electrical features of his car, no matter what make or model it may be. At the conclusion of this series, "Electrical Equipment of the Motor Car," with additions, will be published in book form by the U. P. C. Book Co., Inc., New York, in a size to fit the pocket conveniently.*

The fundamentals of electrical circuits of the motor car were explained through their analogy to water systems, and the relations of current pressure and resistance were brought out. This was followed by an explanation of series and multiple circuits, how electricity is made to do work in lighting, starting, signalling, etc. Calculating the capacity of a battery for starting and lighting and the cost of charging storage batteries and determining the torque a starting motor must develop were explained. Action of primary batteries and dry cells was considered. A section was devoted to the makeup and action of lead and Edison storage batteries, and another to the care of lead batteries in service and the best methods of charging them. Magnets and electromagnetism then were considered, and the principles of generators and motors explained. A section on generator output was followed by one on the purpose and operation of the cutout. Electric motors and engine and motor connections then were considered. Ignition was taken up next.

Part LXVII—Battery Ignition Systems

THE earlier Delco ignition systems were provided with a way to produce a series of sparks for starting and a single spark when running. This device is no longer a part of their standard equipment, but its wide use on the thousands of cars at the present time warrants a description of its operation. The relay and a diagram of its connections are shown in Fig. 369. It consists of an electromagnet provided with two windings, one of large wire and one of small wire, similar to the cutouts. The magnetic effect of the coarse wire is greater than the magnetic effect of the fine wire, and it exerts sufficient magnetic pull on the armature when at rest to draw the armature toward the end of the armature core, which breaks the contacts at C.

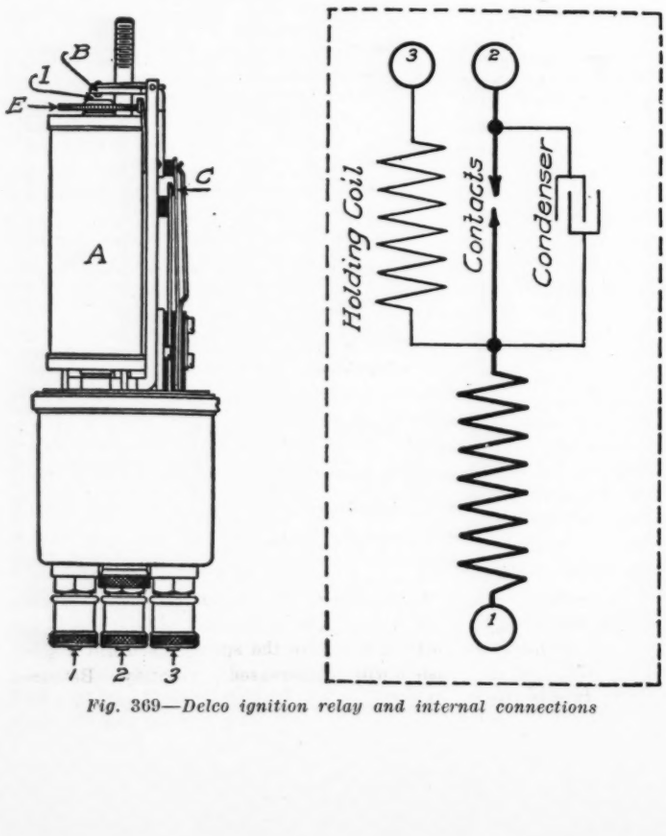


Fig. 369—Delco ignition relay and internal connections

The construction is such that the current ceases to flow through the winding when the contacts C are open. The fine winding is connected to the contacts so that it holds the armature of the relay open after the circuit of the coarse winding is broken at the contacts C, and this winding is known as the "holding coil." The magnetic pull of the fine winding is not sufficient to draw the armature down from the position of rest, but is strong enough to hold it down after the coarse winding has pulled it down. The arc at the contact C is suppressed by the condenser, which also increases the speed of operation. A three-way switch is provided, which has a point for starting and one for running and a neutral point. When the switch is thrown to the starting point, the relay operates continuously just the same as a vibrator and produces a series of sparks; when the switch is on the running point, the fine winding is energized and a single spark is produced.

A special interrupter is provided for extremely high-speed engines. These interrupters are provided with two sets of contacts and a special cam, depending upon the number of cylinders. Each set of contacts is provided with a separate relay, and the circuit is closed through the two relays alternately, thus giving each magnetic interrupter more time in which to open and close the circuit. The con-

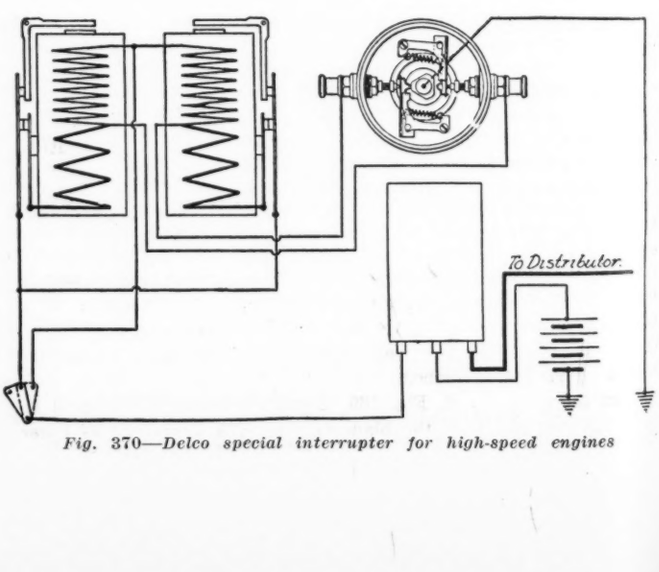


Fig. 370—Delco special interrupter for high-speed engines

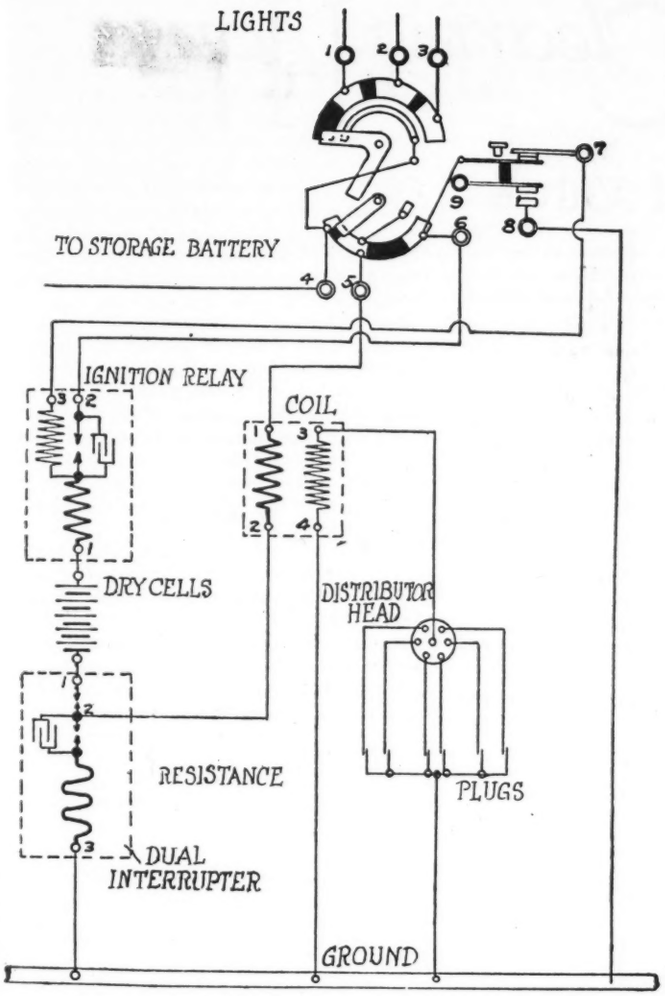


Fig. 371—Wiring diagram of Delco ignition system with dual interrupter and ignition relay

nections of a system of this type are shown in Fig. 370 and a complete wiring diagram is shown in Fig. 371.

Delco Ignition Relay

Two methods of connecting the Delco ignition relay are shown in Figs. 371 and 372. In Fig. 371 the relay winding of large wire and the contacts shown at C in Fig. 369 are in series with a set of interrupter contacts on the dual interrupter. When the interrupter contacts are closed, a current is produced by the dry cells in the coarse winding of the relay, and its armature is drawn down, which cause the primary circuit to open and thus produce a spark at the plug. The armature of the relay is disengaged as soon as the contacts at C are opened, and the armature will continue to vibrate indefinitely as long as the interrupter contacts are together, unless the fine wire winding of the relay is energized in some way. The fine wire winding of the relay will be energized if this switch is depressed, and a series of sparks will be produced so long as the interrupter contacts are closed. Thus in starting the switch which normally connects the points 6 and 7 will be held in an open position.

The method used in connecting the Delco ignition relay on what was called the Junior system for 1914 is shown in Fig. 372. The ignition switch completes the primary circuit, and when the relay is used in this manner, the holding coil circuit is completed through the interrupter contacts. A vibrating spark is obtained as long as the timer contacts are open, and the timing of this vibrating spark is obtained by the action of the contacts upon the holding coil itself. This method of using the relay causes much later ignition than the method previously described.

When the armature B, Fig. 369, is pressed down, there should be absolutely no motion of the blade G, Fig. 373, carrying the lower

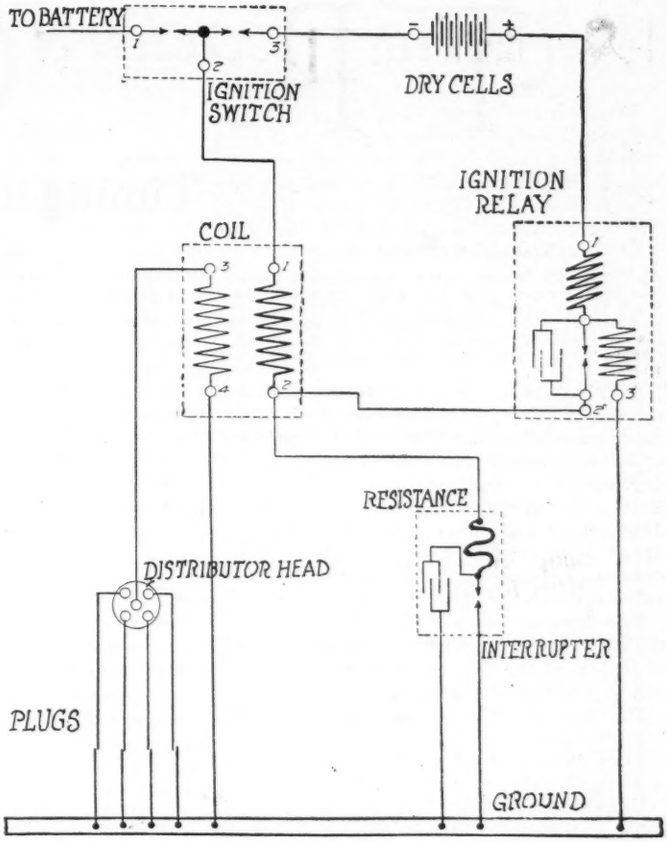


Fig. 372—Wiring diagram of Delco Junior ignition system, showing connections

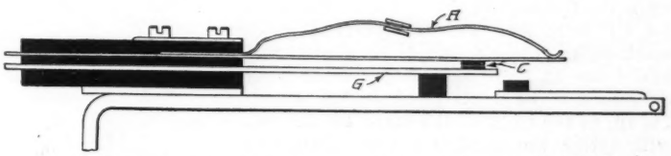


Fig. 373—Method of crowning spring on Delco ignition relay

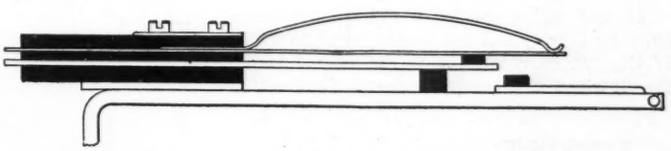


Fig. 374—Proper appearance of springs on Delco relay

contact. The gap at C should be approximately .005 inch. When the blade A is lifted carefully by hand, the contact at C should open to the same gap as before, namely, .005 inch. The contacts at C should be clean and their surfaces perfectly parallel.

There are two adjustments to the relay, as follows: The air gap 1 shown in Fig. 369, which increases the distance at C also, and the tension exerted by the spring A, Fig. 373, on the contacts C. Small adjustments may be made in the gap between the contacts at C, but in no case should this distance be increased very much over .005 inch. If adjustment of this gap does not give a spark of sufficient intensity, it will be necessary to increase the tension of the spring. The tension in the spring can be increased by crowning as follows: The spring is held loosely between the jaws of a pair of duck-bill pliers near the end, which is screwed down to the frame, and the pliers then are moved along the spring with a downward pressure and a slight twist to the right as shown in Fig. 373. This operation, properly performed, will give the spring the form shown in Fig. 374, and the tension will be increased noticeably. Be sure the armature is free on its pin.

The Readers' Clearing House

Timing of Valves

Timing Overland 81

Q—Why is it that some engines have their valves timed faster or later than others? What is the correct position to place the valves to have the greatest pulling power without heating the engine? Give a diagram of the valve-timing for Overland model 81.—Rollin S. Soper, Richford, N. Y.

In Fig. 2 is shown a diagram for timing the valves. It will be seen that the intake valve opens when the flywheel is 8 deg. past upper dead center and closes when it is 38 deg. past the lower dead center. The exhaust valve opens 46 deg. before the lower dead center and closes again 15 deg. past upper dead center; thus the inlet valve opens and closes late, whereas the exhaust valve opens early and closes late.

The flywheel being 14⅛ in. in diameter, the following table gives the measurements in inches, of the valve operation when laid out on the rim of the flywheel.

Diameter of flywheel, 14⅛ in.
Inlet valve opens late, $\frac{83}{64}$ in.
Inlet valve closes late, $4\frac{11}{16}$ in.
Exhaust valve opens early, $4\frac{83}{64}$ in.
Exhaust valve closes late, $1\frac{13}{16}$ in.

To determine whether setting of the valves is correct, proceed as follows, beginning with cylinder No. 1. Open the priming cups over all exhaust valves, to make the turning of the flywheel easier. Turn the flywheel to the left until the mark 1-4 UP is in line with the punched guide mark on the cross member. Now pistons 1 and 4 are at their highest points in their cylinders, or on upper dead center. About 1¼ in. to the right of the mark 1-4 UP you will notice the mark 1-4 I-O. Turn the flywheel to the left until this mark is lined up with the guide mark on the cross member.

At this point the inlet valve of either cylinder 1 or cylinder 4 should begin to lift. If the lift should occur in cylinder 4 turn the flywheel one complete revolution, until the mark 1-4 I-O again appears on top and in line with the guide mark. Now watch or feel the inlet-valve stem of cylinder 1; it should just begin to lift from its seat.

To determine from the closing point of the same inlet valve, turn the flywheel a little more than a half revolution, until the mark 1-4 I-C appears on top. With the flywheel in this position, the inlet valve should be closed and there should be just enough space between the top of the valve-lifter and the top of the valve stem that a piece of newspaper can be placed between them. At the factory stem and lifter are set so that the distance between them is exactly 0.003 in. This clearance is necessary to compensate for the expansion of the valve stem when it becomes hot during the operation of the engine.

If adjustment is necessary, loosen the lock-nut on the valve stem and screw the adjusting nut up or down, as required. If the play between the valve lifter and valve stem is too great, the result will be noisy operation; if the adjustment is too close, the valve may be prevented from seating fully.

Next, test the exhaust valve, again bringing 1-4 UP to the top and turning the flywheel to the left until the mark 1-4 E-C appear in line with the guide. After you have tested the closing of the exhaust valve of cylinder number 1, test its opening by revolving the flywheel until the mark 1-4 E-O comes to the top. Then go carefully over the valves of cylinder No. 4, and of Nos. 2 and 3.

A slight variation of the flywheel markings to the right or left of the guide mark is permissible, but it should not be greater than ¼ in.

There is no one timing that will work best on all engines, as is evidenced by the fact that few engines have the same timing. In most cases the man who designed the engine has had certain things in mind in the timing used and has found that for all-around results desired with that particular engine that a certain relative action of the valves and pistons is best.

TO assist readers in obtaining as a unit all information contained in this department on a certain subject in which they may be most interested, such as ignition, carburetion, etc., MOTOR AGE has inaugurated the segregation of inquiries into classes of allied nature. Questions pertaining to cooling will be answered under that head and so on.

VALVE TIMING
Rollin S. Soper.....Richford, N. Y.
Jacob Voll.....Yankton, S. D.

THE ELECTRIC SYSTEM
Rollin S. Soper.....Richford, N. Y.

MISCELLANEOUS
W. A. Ernst.....St. Joseph, Mo.
Rollin S. Soper.....Richford, N. Y.
E. Nuetzel.....Chicago
I. R. Reader.....Cleveland, Ohio

No communication not signed by the writer's name and address will be answered in this department

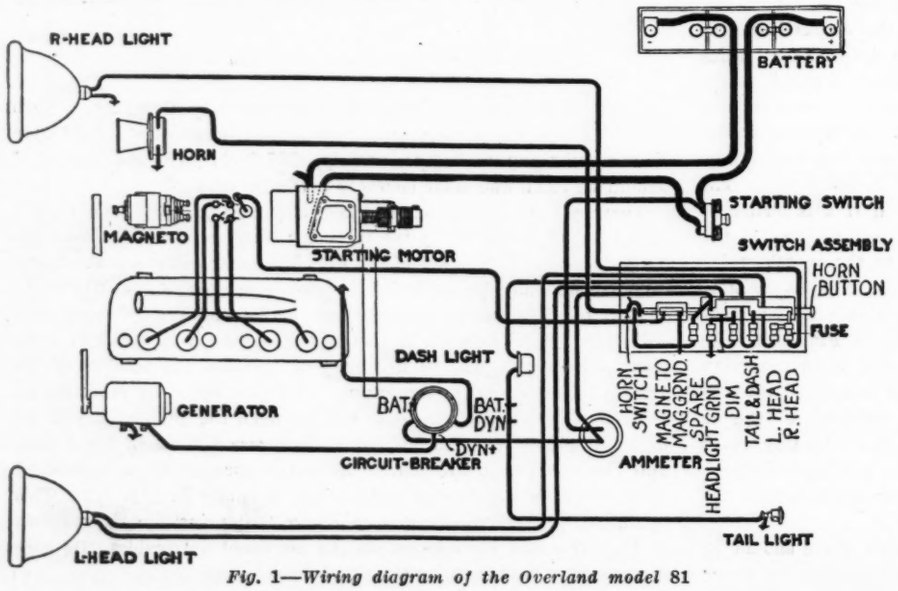


Fig. 1—Wiring diagram of the Overland model 81

Timing 1912 Hupmobile

Q.—Explain proper method to time a four-cylinder, 16-hp. 1912 Hupmobile runabout, with a bore and stroke of 3.75 by 3.38.—Jacob Voll, Yankton, S. D.

Turn the engine over until the marks CL—1 and 4—UP on the flywheel are near the top. Stand squarely in front of the engine and shift this mark ⅜ in. to the right of the punch marks on the face of the front cylinder. See that this position of the flywheel is not altered while the work is going on.

Note how the large time gear shows through the opening at A in Fig. 3, also note the punch marks at the center, on the face of and at either side of the opening of the side plate through which this gear protrudes. Now turn the gear until the punch marks across the face of one of the teeth are in line with the marks either side of the opening, as at A. Keep the gear in this position. Get two ⅜ by 2½-in. U. S. S. standard thread bolts and cut the heads off forming studs. Then screw these into the crankcase as at D. Now slip the crankcase side cover F onto these studs and let it hang there. Secure a sheet iron plate E that will run the entire length of the engine and slide it under the valve stems C and rest the plate on the valve tappets. Have a second person handle the plate.

As the crankcase side plate is tapped in place with a hammer have the valves raised so that the tappets will slide in underneath the stem ends. The valves can be raised by pressing down on the plate as at E. See that the large time gear does not shift out of position.

Do not replace the crankcase side plate with any less number of paper gaskets than were used originally, otherwise the gears will not mesh properly. When you

are sure that the large gear is meshing properly, bolt the side plate up snugly using the regular bolts. Now remove carefully the plate holding up the valves.

Before putting back the magneto, remove the distributor disk D, Fig. 4, which will reveal the distributor brush F. Turn the gear until the brush is in the position shown. Remove the conducting bar G and also the inside aluminum plate K. This will expose the armature. Insert a rule as shown and see that the edge of the armature is ⅜ in. from the side, while the distributor brush is still in its proper position. Hold the armature in position and place the magneto on its bracket on the side plate, meshing the large gear with the magneto gear. Do not mesh the gears too tightly. When the magneto has been properly set, draw up the bottom bolts tightly and also screw up the bolts B. Replace the conducting bar and plate K and the job is done.

The Electric System

Wiring of Overland

Q.—Show wiring diagram of the Overland model 81 so that I can disconnect the wires from the fuse block and switch and put them back properly.

2—What is the rule for timing the distributor wheel of a magneto?—Rollin S. Soper, Richford, N. Y.

1—The wiring diagram is in Fig. 1.

2—The distributor generally is timed with breaker points on the armature. For instance, if the magneto has been coupled up to the drive mechanism so that the points are about to separate when piston of No. 1 cylinder is in the firing position, the distributor arm should be on segment No. 1. If it is not, the magneto drive should be disconnected and the armature revolved until the above conditions are realized.

Miscellaneous

Why Car Lacks Power

Q.—My Overland, model 81, lacks power, especially on hills. It will make about 40 m.p.h. on level roads, but as soon as I get to a hill or grade it chokes down and pounds on all four cylinders, either with the spark advanced or retarded. The bearings are tight and I have ground the valves and cleaned out the carbon, which hasn't improved matters any. There is fair compression on all cylinders. Would patent rings give it more pulling power, or what is the remedy?—Rollin S. Soper, Richford, N. Y.

1—There are four things to look after; the mixture, spark, compression and valves. The mixture may be too thin or too rich. If too thin the engine will knock; if too rich, it will gallop and smoke. There may be a partial stoppage of fuel, which allows the gasoline to reach the carbureter on a level, but fail on a hill. Clean the line and also the float and needle valves of the carbureter.

The spark may be timed incorrectly, so it takes place too late or too early. Look to the magneto points; they must be bright and smooth and correctly adjusted.

Loss of compression may be due to valves not seating properly, scored cylinders, worn rings, defective priming cup, valve cap or spark plug.

The valves may be timed incorrectly by the tappets being too high or too low, cam gears loose, or improperly set.

You state that the engine has fair compression, which leads us to believe that the rings are worn. In this case the installation of patent rings would probably be beneficial.

How Reader Tests Armatures

St. Joseph, Mo.—Editor MOTOR AGE—Your answer to Frank S. Pohanka, Washington, Ill., entails considerable time to carry out the test. A way I have used for years on all sizes of armatures from motor car outfits to large railway motors and generator armatures for direct current is to get two dry cells, a buzzer and a low voltage delicate telephone receiver. Connect the batteries in series with the buzzer; take two leads, or a piece of duplex drop cord, fasten one wire to the battery and one to the buzzer. Also get a strip of fiber ½-in. wide. Fasten two flexible brass strips ¼-in. wide, 2 in. long; taper both ends to a joint and fasten them to one side of the strip of fiber. Connect the two wires of the duplex cord one to each strip. Now on the opposite side fasten two strips of the same width, but ½-in. shorter and insulated from each other and lower strip. Connect the telephone receiver to these and then test the armature. Take a strip of fiber, press it down on adjacent commutator bars, and if shorted, you will not hear a sound in the receiver. If O. K. you will hear a sound, this being caused by the vibration of the diaphram, being produced by the buzzer interrupting the circuitt. In case the wire is broken, or not well soldered into the segments, it will sound considerably louder than when O. K. Shorts in single coils can only be detected by testing transformers. These can be purchased or built at home by anyone out of stove pipe sheet iron and No. 14 BTS double cotton magnet wire.—W. A. Ernst.

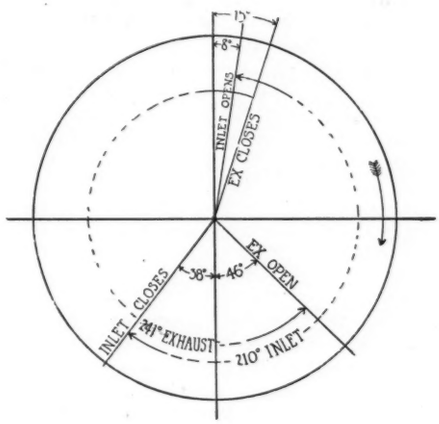


Fig. 2—Diagram showing method of timing Overland valves

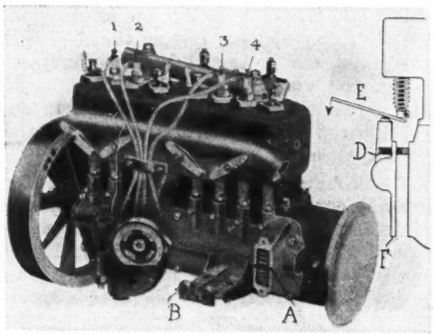


Fig. 3—Hupmobile engine with side plate in place

Wants More Speed

Q.—What speed can be attained by a four-passenger, model 22-73 Mercer? What speed does the Mercer company claim?

2—What would you recommend to increase the speed of this car? Give dimensions of parts needed.—I. R. Reader, Cleveland, Ohio.

1—According to the catalog specifications of this car, the makers guarantee a speed of 1 mile in 48 sec.

2—We believe that the car is capable of as great a speed as you may care to drive it on the road. However, if you wish to use it for track work, you might change the gear ratio in the rear axle, set the spark ahead slightly, rebore the valve ports and fit larger valves, substitute a larger carbureter, increase the lift of the valves by fitting a new camshaft, etc. All of these things run up the cost, so if you merely want the car for road work, we suggest that you leave it unchanged.

Dust Collars Too Loose

Q.—What causes a ringing noise on a Velie model 22, 1916 car? The noise is somewhere between the rear universal joint and the axle housing. It occurs only when running with the clutch thrown out. I had the same trouble some time ago and by tightening the nut as shown in the sketch the noise stopped. The nut seems to work loose, although the lock washers and nut were tightened.

Also tell me how to disconnect the rear universal joint so I can put a new washer between the nuts?—E. Nuetzel, Chicago.

If you will tighten the dust collars on the universal joints we believe the ringing noise will be eliminated.

To disconnect the rear universal joint it is only necessary to remove the six bolts from the flange of the joint and it will come apart very easily.

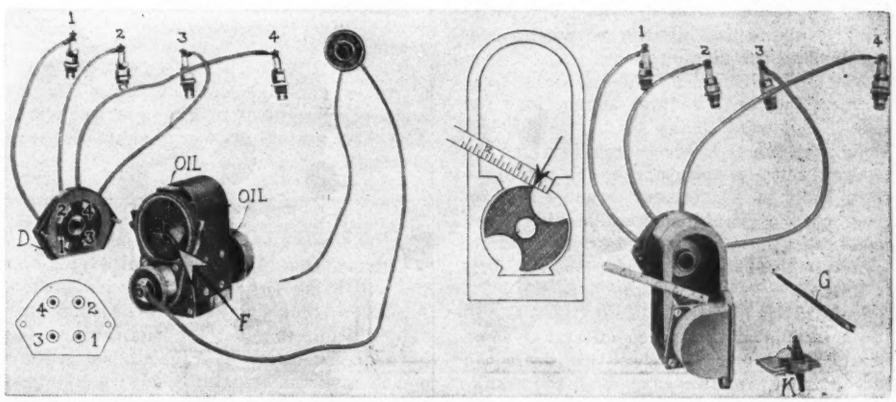


Fig. 4—Points to be observed in timing 1912 model Hupmobile. A rule is used for setting the armature correctly

The Motor Car Repair Shop

Regular Truck Inspection Pays

IT is important that trucks should be inspected at regular intervals, generally once each month. Some distributors give inspection as part of their free service and make such minor adjustment as can be made in the course of a 3 or 4-hr. inspection and then report upon any other mechanical difficulty which may require a longer time to correct. These inspections follow a general form as follows:

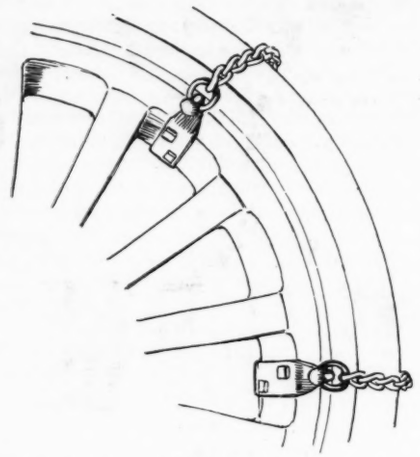
1—TEST MOTOR COMPRESSION—This means to check compression by timing the engine by hand and comparing compression of each cylinder with others. If they are all equal, then the engine can pass inspection. Provided one cylinder does not test to standard, check push rod adjustment for proper clearance. These adjustments for an average truck engine are approximately .006 for intake and .008 for exhaust. If the push rods are both free it will then be necessary to grind the valves; first the exhaust and then, if compression is still under standard, the intake. It is good practice at this time to check the push rod adjustments on the remaining cylinders.

2—CLEAN CARBURETER AND GASOLINE STRAINERS—Drain all gasoline from the carbureter. Remove the cover to the carbureter float chamber and clean out any water and dirt that may be in the float chamber. Remove the strainer from the gasoline entrance to the float chamber and clean it. Test the flow of gasoline through the gasoline line by opening the shut-off cock at the vacuum tank or gasoline tank. If the flow is not standard, disconnect the gasoline line and clean same.

3—CLEAN AND ADJUST MAGNETS—Remove and clean the collector ring brush. Remove the distributor board and clean it, using double-weight sandpaper on the contact surface if necessary. Clean and adjust the magneto breaker points if necessary. The proper distance between the points is to be the same as gage on magneto wrench supplied with the equipment. The points, if in need of being lined up, can be dressed with a fine Swiss file. Examine and tighten all wiring connections to the magneto.

4—COOLING SYSTEM—Examine the radiator, water hose and connections for leaks. All water leaks should be stopped. Flush out the radiator thoroughly. If the packing nuts on the water pump are up to their limit of adjustment, remove and repack with a graphited cord packing. Repack the grease cups on the water pump. Examine the fan and tighten the fan belt if needed.

5—MOTOR LUBRICATING OIL—Examine a sample of crankcase oil and if same has lost its lubricating qualities, drain the old oil from the crankcase, flush the crankcase with kerosene and refill with new oil. On new trucks, or one in which the engine has been overhauled, it is good policy to change this oil for a fresh supply every 500 miles until after 2000 miles of service, and thereafter change at about every 1000 miles of running.



Hooks for non-skid truck chains can be made by a blacksmith if not available locally

6—CLUTCH—Remove the cover of the clutch housing. Examine the clutch release or throw out the bearings to be sure that it is being properly lubricated. These bearings usually are oiled through a flexible tube, the same being accessible from an exterior position. During the road test the clutch can be tested for smoothness of action and whether or not it is slipping. If the clutch slips it can be adjusted in accordance with instructions given by the manufacturer.

7—GEARSET—Inspect the gearset for general condition of bearings, gears, etc. It is important that oil should be maintained at the proper level. This level generally is designated by an oil level plug inside of the case. If no oil level is specified it may be assumed as being about on a level with the main shaft.

8—UNIVERSAL JOINTS—Test the flange bolts for tightness. Inspect the joints for lost motion. Pack them with grease.

9—REAR AXLE—Inspect and bring the oil to level in the axle housing. Test by hand adjustment of driving gears or worm. Test the pinion or worm shaft for end play.

10—WHEELS—Remove and inspect the front wheel bearings. Repack with grease and replace. Make certain that bearings are adjusted properly. If the rear axle is of the full floating type give the rear wheels the same inspection as the front.

11—STEERING GEAR AND CONNECTIONS—Check the alignment of the front wheels. Remove lost motion from the steering connections, if any. Examine the steering knuckle pins. Grease and see that all steering parts are free to move.

12—SPRING CLIPS AND SHACKLES—Spring clips should be kept tight at all times as they prevent the springs from moving out of their normal position. On a new truck these should be tightened frequently until the initial stretch is removed from the clips. If spring shackles are kept tight, it will prevent unnecessary wear on both the spring bolts and bushings.

13—ROAD TEST—The truck should then be given a road test, during which the engine, clutch, brakes and its general condition can be checked. The engine should be tested for low-speed running, pick up and for speed when the truck is controlled by the governor under wide open throttle. Both the service and emergency brakes should be tested to determine if they are equalized properly as to their holding ability and to insure that they do not drag.

14—GENERAL LUBRICATION—In the care of trucks the driver should be given opportunity to keep the truck properly lubricated in accordance with the schedule suggested by the maker in the information book. It requires about half a day each week to maintain the truck, and it is time well spent.

The advantage of truck inspections is that they reduce trouble to a minimum as the vehicles are not permitted to deteriorate and any trouble that develops is remedied before it really becomes serious. This effects a reduction in repairs, less road trouble and permits a truck to give the best satisfaction that it is capable of, even if it is being handled by a more or less careless driver.

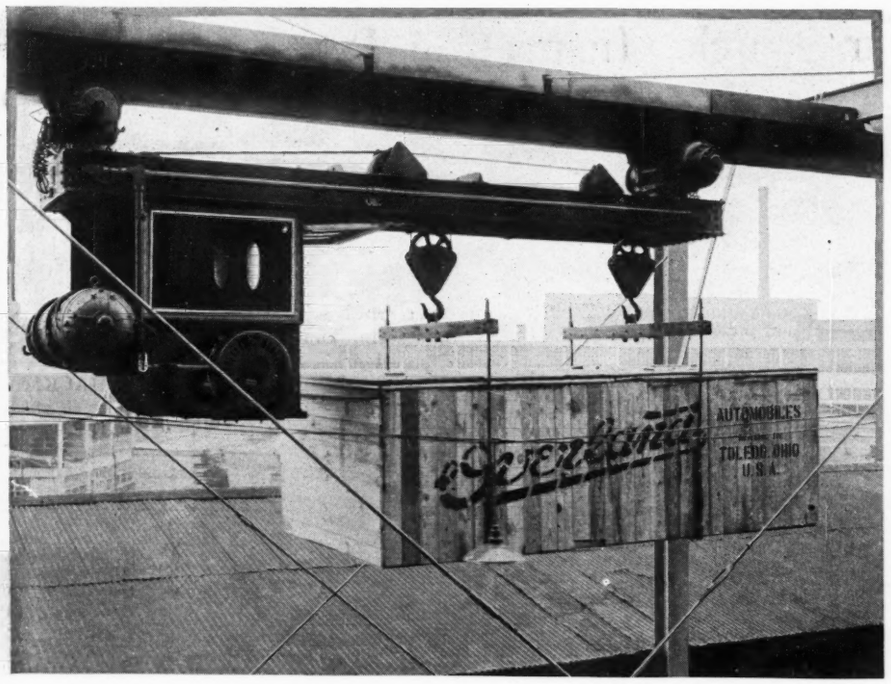
Non-Skid Chains

It sometimes is necessary to equip trucks operating on bad roads with non-skid chains. One method which has been adopted by many manufacturers for their larger units is to provide hooks between every other rear wheel spoke, fastened to the wheel felloe by lag screws or bolts, so that a cross chain can be snapped into them. Thus a twelve-spoke wheel will have six cross chains, and a fourteen-spoke wheel seven cross chains. These hooks, if they are not available locally, can be made by a blacksmith. They are so constructed that each can be attached by two lag screws, or bolts. This type of non-skid chain is permanent when attached and has proved very satisfactory in service.

REGAL TO MAKE TRUCK

Detroit, Oct. 27—The Regal Motor Car Co. will bring out a new 1-ton truck soon. A sample truck has been worked out carefully during the last ten months and has been driven on an average of 600 miles a month in actual trucking service. Details will be given later. The company reports an excellent business and plans increased production to care for the demand.

Among the Makers and Dealers



CARS THAT TRAVEL AT HOME—The Skyline railroad at the Willys-Overland factory answers to a fond nickname of the Twentieth Century Willys-Overland Limited. Formerly it took eight or ten men to get a car out to the yards to be shipped away

CONN to Manage Buick Traffic—George C. Conn, formerly traffic manager of the Pere Marquette, has been appointed traffic manager of the Buick Motor Co.

McLaughlan to Manage Dort Traffic—G. E. McLaughlan, who for the last sixteen years has been in the railroad business, has been appointed traffic manager of the Dort Motor Car Co., Flint, Mich.

Victor Wheel Installs Equipment—The Victor Wire Wheel Co., Kalamazoo, Mich., is shipping three carloads of machinery and equipment from Detroit and will install them in the old Gibson Mandolin plant. This company will manufacture spokes, nipples and wheels this fall.

Oneida Building Almost Complete—The Oneida Motor Truck Co., De Pere, Wis., rapidly is completing the construction of its plant and will have it completed within a few weeks. At present the walls are up and the roof will be put on this week. Within ten days time a spur track 1200 ft. in length will be built to the plant.

Flint Teaches Ignition System Service—A course in starting, lighting and ignition systems has been started by the Industrial Fellowship League school of motor car trades, Flint, Mich. The course will cover the theory and service common to all systems with particular study of the Delco, Auto-Lite, Westinghouse, Gray-Davis and Bijur.

Indiana Rubber Insures Employees—The Indiana Rubber & Insulated Wire Co., Jonesboro, Ind., has presented a life insurance policy to each employee who has been in its service a year or more. The amount of the policy is according to the number of years in service and will be increased from year to year as the employee grows older in service. The total amount of insurance will amount to approximately $250,000, the expense of which will be paid by the Indiana Rubber & Insulated Wire Co.

Reo Promotes F. H. Akers—F. H. Akers, who for the last five years has been factory representative for the Reo Motor Car Co. in the central western states, has been appointed assistant sales manager.

Gentry Now with Thermoid—H. C. Gentry is now with the sales department of the Thermoid Rubber Co., Philadelphia, Pa. Mr. Gentry formerly was with Acme Rubber Mfg. Co. and also with Ajax Rubber Co. in the South and for several years represented Advance Rubber Co.

Olds Additions Ready Jan. 1—The two new factory buildings of the Olds Motor Works are well under way and will be in use about Jan. 1. One is a three-story structure, 80 by 400 ft. that will be used for new material storage. The other is a three-story building 80 by 400 ft. with a 90-ft. L. This building will be used for final assembly and painting.

Hascall to Put Million in Buildings—The Hascall Mfg Co., Ludington, Mich., announces its intention to immediately invest $1,000,000 in new buildings and machinery for construction of veneer parts for airplanes. It is stated that several large contracts already have been secured and the company plans to employ 3000 after completion of the factory.

Monarch Tractor in Canada—The Monarch Tractor Co., Toronto, Ont., has recently been incorporated in Canada and has made arrangements to build a factory in Toronto. The output of the factory here will be devoted to the foreign trade as well as to the sales in the Dominion. The first 250 machines to be built here will be delivered to the seaboard for the French government during the season of 1918. W. M. Smith is president. The Monarch, which attracted considerable favorable comment at the Canadian National Exhibition, is made in three sizes, for handling four, three or two plows and other tools and implements using similar power.

Tillotson Carbureter in New Building—The Tillotson Mfg. Co., Toledo, Ohio, is now in its new three-story building and is manufacturing 2000 carbureters a day. This building c vers approximately 3 acres, employ 500 men and is devoted exclusively to carbureter manufacturing.

McKee Organizes Advertising Agency—Homer McKee, formerly advertising manager of the Premier Motor Corp. of Indianapolis, has organized the Homer Mckee Co. and will handle the accounts of Premier, J-T tractors, the Hoosier Subcarburetor and others. Aaron Wolfson is vice-president and Fred H. Hoover, secretary and treasurer.

Landover Truck About Ready—The Landover Truck Co., Marinette, Mich., will commence manufacturing trucks within a few days and plans to have the first truck completed soon. Business offices and showrooms have been opened. George W. Burn has been appointed secretary and treasurer and John Shaw, brother of W. E. Shaw, designer of the truck, has taken charge of the installing of the machinery.

Fuller & Sons Adds Two Buildings—Fuller & Sons Mfg. Co., Kalamazoo, Mich., has begun to move and install machinery in its new factory building, now nearing completion. The heating plant also is practically finished. The addition of these two buildings will more than double the floor space, together with the new heat-treating plant, which will put the company in far better condition to make prompt deliveries during 1918.

Highway Trailer Making Delivery—The Highway Trailer Co., Edgerton, Wis., a $180,000 corporation which took over the Edgerton Wagon Works four months ago, has been delivering light two-wheel trailers for three months and now is shipping heavy-duty trailers. The daily schedule is about five fifth-wheel semi-trailers and two four-wheel truck trailers. The concern also is marketing the Highway ball and socket coupling and Highway fifth wheel. The coupling has a positive bridge lock and takes up for all wear on the ball. The fifth wheel has a spring cushion drawbar and oscillates at every angle. All heavy-duty types of trailers are equipped with Timken axles and bearings.

Eventful Voyage for Goodyear Director—Howard Hunter, managing director of the Goodyear Tyre & Rubber Co. of Australasia, had the experience of being shipwrecked on a south sea island 6000 miles from San Francisco while enroute to the Goodyear factory at Akron, Ohio. The ship struck on the rocks near a small coral island, and though all the passengers and crew were saved the ship was torn to pieces. Mr. Hunter reached New Zealand in a small fishing smack, which was so overcrowded he was forced to sleep on deck for five nights. He finally reached this country and will return to Australia when the conferences which brought him here close, but he will pick out the largest ship that plies the Pacific instead of taking passage on a tramp steamer as he did before rather than wait for a regular liner.

From the Four Winds

HOW NEW YORK BUILDS ROADS—Trucks are building roads in the war zones and in the peace zone. This one, a 3-ton Packard, belongs to the New York state highway department and works with a 5-ton Troy trailer to build some of the state's roads

TOUR to Boost Good Roads—A good roads and cup tour under the auspices of the Oklahoma City Motor Car Dealers' Association left Oklahoma City Oct. 15 on a route that included forty-six cities and ended Oct. 20. Forty-three cars and a hundred or more dealers took part. The main purpose of the tour was to boost good roads.

Cleveland to Show Jan. 19-27—The seventeenth annual motor show at Cleveland, Ohio, will be held Jan. 19-27 in the Wigmore Coliseum. Two years ago Cleveland inaugurated the plan of holding a show through two Sundays and this will be continued again this year. The Cleveland show is held by the Cleveland Automobile Show Co., a dealers' organization, with the co-operation of the Cleveland Automobile Club.

El Paso Gets Ready for Show—The third annual El Paso motor show will be held Nov. 12-19 under the auspices of the El Paso Motor Trades Association with E. W. d'Allemand, business manager. Elaborate arrangements are being made. A tent will house the displays. It is planned to have a hill-climbing contest, a popular-girl contest and a motor disassembling and assembling contest.

U. S. Posts Mojave Desert—Actual work of sign-posting the Mojave desert east of Los Angeles, Cal., to make travel safe has begun. An appropriation of $10,000 is available, this being set aside by Congress after ten years of petitioning on the part of the Los Angeles chamber of commerce. Under the direction of O. E. Meinzer of the United States geological survey three parties started for the desert. Every water hole will be marked by steel signs. It is expected the work will be completed by January.

Maintains Roads Economically—Montgomery County, Alabama, has improved 450 miles out of a total of 700 miles of public roads with the help of only $825,000 bonded indebtedness. All roads which have been improved with the proceeds of bonds are maintained, and a considerable mileage has been improved from current funds. Taking the average value of a mile of these roads as $5,000, the bonded indebtedness amounts to only 37 per cent of the actual value. The road work was carried on with statute labor. All men from eighteen to forty-five years old, not physically disabled, must work ten days each year on the roads or pay 50 cents a day toward the labor. Centralization of the road authority has made it possible to provide motor trucks, trailers and scarifiers which can be sent to any part of the county where needed. In this way the cost of scarifying and reshaping gravel roads has been reduced to as low as $15 a mile in some cases.

Dirt Roads the Biggest Problem—Records at the close of 1916 show that only 11½ per cent of the 2,455,761 miles of rural roads are surfaced. This shows the great problem to get the most economical and efficient improvement of dirt roads. The condition of the material market and the labor situation make hard-surfacing a costly undertaking, and state highway departments which are hampered by these conditions are trying to use the resources required to supervise costly work to bring about a better appreciation of what can be done toward keeping the dirt road in good condition. Of all the states Massachusetts has the largest percentage of her roads surfaced, 47.6; Oklahoma, where 99.3 per cent of the roads are dirt, the smallest. Other states with low percentages of surfacing are South Dakota, 0.8 per cent; Iowa, 1 per cent; Kansas, 1.3 per cent; North Dakota, 1.6 per cent; and Nebraska, 1.7 per cent.

Kansas City Sets Show Dates—The third annual tractor show will be held at Kansas City, Feb. 11-16, the same dates as the Kansas City motor car show. The location of the tractor exhibition has not been selected, but it will be in quarters that can be heated.

Removes Warnings from Highways—The Ohio state highway advisory board has ordered county commissioners to remove all advertisements in the form of railway crossing warnings from public highways. The reason given for this action is that there are so many of these "fake" warnings that persons are paying no attention to the real warnings.

Car Furnishes Safe-Robbing Power—The first instance on record of the use of welding and cutting apparatus in robbing a bank in Wisconsin came to light this week through the burglary of a state bank at Waldo, Wis. So far as can be learned, the job was done by a trio of yeggmen, who cut their way through the vault door with oxy-acetylene apparatus, presumably fed from the gas tank on their motor car.

From Taxicab to Ice Wagon—An old Buick at Cedar Lake, Ind., has an interesting history. It was bought originally for a taxicab and was one of the first cabs used in Chicago. Its present owner says it has earned more money in the taxicab business than it could carry in two loads. He believes it has covered more than 300,000 miles, and it still is going. The old Buick now carries ice from house to house—body gone, old soap box for a seat, no tires but still on the job.

Texas Licenses 185,000 Cars—The Texas highway commission had issued up to the middle of October licenses to approximately 185,000 cars under the new law which went into effect July 15. It is estimated that the total number of cars in the state is about 225,000 and that this number of licenses will have been issued by Jan. 1. The total receipts of the state highway department up to Oct. 1 were $766,570. Of this amount the department disbursed $389,755, which was returned to the different counties from which the taxes had been received and will be used for road construction purposes.

Reports on His Gasoline Mileage—Dr. John D. Clark, professor in the University of New Mexico, Albuquerque, N. M., bought a Willys-Knight at the Toledo factory in July and drove it back home. He reports that he has driven it 4251 miles and on his trip west, 2446 miles, the car gave 15.2 m.p.g. The car started out giving less than 11 m.p.g. but worked up to a better mileage and gave more than 16 m.p.g. on the paved roads of the East. In Western Kansas it gave 18 m.p.g. on one day's run. Through Mexico, over the mountains, it made 14.7 m.p.g. The average for the trip was cut down by very muddy dirt roads in the Mount Vernon district of Ohio and by the half-wet, half-dry roads of Illinois. Doctor Clark figures he has obtained 460 m.p.g. of oil, which does not include oil thrown away when he drains the crankcase, about every 1,000 miles.

Coming Motor Events

MEETINGS

Jan. 11-16—New York, National Association of Automobile Accessory Jobbers, convention.

SHOWS

Nov. 12-18—Denver, Col.
Nov. 12-19—Los Angeles, Cal.
Nov. 12-19—El Paso, Tex.
Dec. 3-8—Akron, Ohio.
Jan. 5-12—New York.
Jan. 11-18—Washington, D. C.
Jan. 11-19—Providence, R. I.
Jan. 11-19—Philadelphia, Pa.
Jan. 18-24—Milwaukee, Wis.
Jan. 19-26—Montreal, Canada.
Jan. 19-27—Cleveland, Ohio.
Jan. 21-26—Scranton, Pa.
Jan. 21-26—York, Pa.
Jan. 21-26—Portland, Ore.
Jan. 26-Feb. 2—Chicago.
Feb. 2-9—Minneapolis, Minn.
Feb. 9-16—Kansas City, Mo.
Feb. 11-16—Kansas City, Mo.
Feb. 11-16—St. Louis, Mo.
Feb. 18-23—Syracuse, N. Y.
Feb. 18-23—Grand Rapids, Mich.
Feb. 18-23—Springfield, Ohio.
Feb. 18-23—Des Moines, Iowa.
Feb. 18-25—Pittsfield, Mass.
Feb. 18-27—South Bethlehem, Pa.
Feb. 23-March 2—Omaha, Neb.
March 2-9—Boston, Mass.
March 20-23—Trenton, N. J.
April 9-13—Stockton, Cal.